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ABSTRACT

To support a comprehensive look at the problem of increasing minority student achievement in the Montgomery County Schools (Maryland), this report reviews the literature to identify factors affecting minority achievement and to learn from 20 years of programs aimed at low achievers. Section I describes three types of intervention programs: (1) federal/national (Headstart and other early intervention programs, Chapter I and other compensatory approaches, and the privately developed People United to Save Humanity, PUSH-EXCELL program; (2) private school programs; and (3) public school district programs in the District of Columbia, New York City, Austin, and San Diego. Section II reviews the findings on strategy effectiveness at the overall school level (principal leadership, school climate, grade organization, class size, ability grouping, and pullout instruction), the classroom level (time-on-task, curricular variation, direct instruction, teacher feedback, teacher expectations, teaching strategies, student team learning, and mastery learning), and out-of-school (community and parental involvement). Based on these findings Section III recommends further analysis of variables shown to enhance low-achieving students' performance: class size reduction to 15 or less; student team learning and teacher training programs such as Teacher Expectations and Student Achievement (TESA); and mastery learning programs. (BS)

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**MONTGOMERY COUNTY**
**PUBLIC SCHOOLS**
ROCKVILLE, MARYLAND

# A Review of Programs and Strategies Used in Other American School Systems for Improving Student Achievement

**July 1984**

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**Wilmer S. Cody**
Superintendent of Schools

**Prepared by the Department of Educational Accountability**

MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

# A REVIEW OF PROGRAMS AND STRATEGIES USED IN OTHER AMERICAN SCHOOL SYSTEMS FOR IMPROVING STUDENT ACHIEVEMENT

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## EXECUTIVE SUMMARY

In a memorandum to the Board of Education dated June 27, 1983, Blair Ewing, then president of the Board of Education, called for a comprehensive look at the problem of increasing minority student achievement. In support of this effort, the Department of Educational Accountability was asked to provide an overview of what has been learned nationwide about educating minority students. This overview was intended to provide a context for better understanding the problems facing minority students and for assisting staff in finding promising solutions.

This review of literature was developed in response to that request. Its purpose was to take a hard look at what research says about the factors affecting minority achievement, and to document what has been learned from some twenty years of programmatic efforts. Since, however few studies were found which focused on low achieving minority students per se, this review was expanded to include programs for low achievers' from both minority and majority groups.

The picture presented by these data is far from complete, and the reader must use professional judgment in deciding the degree to which the results may be generalized to students in Montgomery County. For example, most of the studies have taken place in what would be considered mainstream urban or suburban school settings serving students far lower in achievement than those served here. Different results might have been found in many of these studies if the environment in which students were taught were different.

The present report is divided into three major sections. The first describes the results of programs implemented both nationally and locally whose goals have been to improve the achievement of minority and majority students, the second presents an overview of strategies used by schools to enhance achievement, and the third present some suggestions for educational efforts in MCPS. Programs selected for review were ones for which formal evaluation data were available. Strategies included were ones which have received national interest or were of particular concern to MCPS staff. Continued monitoring of the literature in each of these areas is planned. Before turning to these studies, however, some additional limitations must be pointed out.

- Most studies provide a very incomplete picture regarding students from different racial/ethnic backgrounds. Literature on minority students, where available, primarily addresses blacks, with an occasional article looking at Hispanic students.

- In many of the studies, the influence of race/ethnicity is not separated out from that of socioeconomic status (SES).

- The studies deal with groups of students and report effects in terms of averages: clearly, within any group, there are widespread differences among individuals.

- In many cases, the studies are primarily based on analyses of student performance in the elementary grades.

As will be seen in the pages which follow, our review shows that there is reason for cautious optimism. Special programs have proven valuable in enhancing the performance of low-achieving students, at least in the short run, and there are many strategies which seem to be promising. Based on our analysis, the report highlights some strategies which MCPS might look at further. These are the following:

- o reductions in class size to 15:1 or less
- o use of student team learning and of teacher training programs such as Teacher Expectations and Student Achievement (TESA)
- o mastery learning programs

However, this review also makes it clear that there are many problems yet to be solved and that special efforts continue to be needed to improve the performance of low-achieving students, minority and majority students alike.

EXHIBIT 1

Overview of Intervention Strategies

| Program | Approach | Findings |
|---|---|---|
| **Federal/National Programs** | | |
| Head Start and Other Early Education Programs | Programs for the low-income preschool child employing a wide variety of approaches, including in various combinations the enhancement of self-concept and motivation to learn, basic skills instruction, problem-solving skills instruction, and parental involvement. | Studies show that programs produce short-term gains in intelligence and academic achievement which diminish over time. Participants appear to perform better in school, at least in the primary grades, than comparable children not served. However, Head Start participants continue to score below norms on tests. |
| Title I/Chapter I and Other Compensatory Education Programs | Programs directed at the school-age child, generally focused on providing extra instruction in reading or math. This extra instruction is frequently provided outside the regular classroom with aides often being employed to assist in teaching. | Programs produce small, but consistent, gains in the academic attainments of low achievers which are sustained for some years following program participation. |
| PUSH-EXCEL | A "total involvement" approach aimed at mobilizing students, parents, peers, teachers, church officials, and other community members to work together to develop the motivation and habits which would enable the child to succeed. | Operation PUSH-EXCEL was minimally and unevenly implemented. Each site included only some aspects of what was intended to be a total effort. Actual participation was low. The potential of this program cannot be adequately evaluated because the program has not been implemented as designed. |

EXHIBIT 1 (continued)

| Program | Approach | Findings |
|---|---|---|
| **Private School Programs** | | |
| Independent Black Schools<br><br>(Lower East Side International Community School, Marva Collins' West Side Preparatory School, Muslim schools) | Alternative schools characterized by high expectations, high motivation, strong discipline, structured instruction, and a match between the culture of the student and the school environment. | Data attesting to the success of these schools are basically anecdotal in nature, and no well designed, empirical studies of the programs could be found. |
| Private Catholic Schools | Alternative schools varying in approach but generally characterized by:<br><br>- structured instruction<br>- strong discipline<br>- intense parental involvement<br>- a decentralized bureaucratic structure<br>- a concept of shared work among staff<br>- a safe, orderly school climate<br>- a clarity of mission and shared purpose | Preliminary data suggest that these schools may be successful with minority students. However, it is not clear that these schools are more successful than public schools, and the effects of self-selection have not been adequately assessed. |

EXHIBIT 1 (continued)

| Program | Approach | Findings |
|---|---|---|
| **Public School Programs** | | |
| D.C. Public Schools | A combined approach aimed at improving achievement, including:<br>- the Competency-Based Curriculum (newly developed curriculum materials in reading, math, language arts, and science)<br>- the Student Promotion Plan<br>- the Extensive Tutoring Program<br>Supportive of these efforts are an emphasis on the "community family," efforts directed toward building self-confidence and self-esteem, improved teacher training, a systemwide emphasis on reading and vocabulary, and practice on test-taking skills. | Preliminary findings suggest that the program is effective in reducing retention and increasing student gains in the elementary grades for low-achieving black students. |
| New York City Public Schools | Promotional Gates Program, which established performance standards for promotion and retention and special services for the retained student. Included are:<br>- reduced class size (15-20 students)<br>- experienced teachers<br>- additional staff development<br>- increased "time-on-task" in reading and mathematics<br>- additional staff support<br>- special instructional strategies | Overall, the program appears to have had a positive impact on promotion rates, but these increases in promotion were not linked to large changes in achievement or increased attendance. |

EXHIBIT 1 (continued)

| Program | Approach | Findings |
|---|---|---|
| Austin, Texas | Provision of schoolwide programs in which pullout instruction was eliminated and replaced by in-class programs with a pupil: teacher ratio of 15-to-1 or less. The lower pupil:teacher ratio was accomplished through the use of Chapter I and supplemental district funds. | Initial data show that this approach appears to produce modest but statistically significant achievement gains in elementary students, particularly among low achievers. White, black, and Hispanic low achievers all appear to profit from the program. No long-term data are available. Factors influencing these gains include more efficient use of time, decreased discipline problems, better use of class time, an increased closeness between teachers and students, and higher teacher morale. |
| Mesa Public Schools | Project Umbrella, which includes a wide range of services aimed at enhancing reading achievement (pullout instruction, extended-day instruction, individualized instruction) as well as special services for non-English speakers and migrant children. | Low-achieving students served under Project Umbrella appear to be making gains in the area of reading achievement. It is not possible to draw specific linkages between program features and student outcomes. |
| San Diego City Schools | An Academic Goals Program--with an emphasis on mastery learning, direct instruction, time-on-task, and reduced classroom disruptions and interruptions--set in the context of magnet programs, Chapter I programs, and a school improvement program. | The performance of black, Asian, Hispanic, and white students has improved; and the difference in performance between schools serving higher and lower concentrations of minority students has decreased. However, linkages between specific practices and outcomes cannot be made. |

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EXHIBIT 2

Summary of Findings Regarding Factors Believed to Promote the Learning of Low-Achieving Students

| Strategy | Hypothesis | Findings |
|---|---|---|
| Overall School Level Factors | | |
| Principal Leadership | Instructionally effective schools are characterized by principals who are strong leaders. | Some studies have concluded that effective schools in comparison to ineffective schools have principals who provide strong managerial and/or instructional leadership. However, the research is not clear regarding which leadership behaviors promote achievement or whether leadership from the principal per se is essential. |
| School Climate | Effective schools are characterized by a safe and orderly climate in which staff hold high expectations for themselves and their students. | Studies of effective schools show that more effective schools are characterized by a safe and orderly environment, higher expectations for students, and a more positive attitude among staff. The data do not, however, indicate whether the more positive climate is a consequence of higher achievement or a cause. |
| Grade Organization | The particular grades grouped together in a school building have a relationship to student learning. | Studies of middle schools (generally Grades 6-8) have failed to show any consistent relationship between grade organization and achievement. Studies at other grade levels could not be located. |
| Class Size | There is a relationship between class size and achievement with smaller classes being associated with higher levels of achievement. | Studies suggest that only when class size is reduced to less than 15 to 1 is there any real effect on achievement. Within the range of class sizes typically found in public schools, no relationship exists. |

EXHIBIT 2 (continued)

| Strategy | Hypothesis | Findings |
|---|---|---|
| Ability Grouping | Grouping students into groups homogeneous with regard to achievement level has a positive effect on the low-achieving students. | While ability grouping may be of benefit to higher-achieving students, studies suggest that the practice appears to have a negative impact on lower-achieving students. |
| Pullout Instruction | Pullout instruction, instruction in which students are provided special services outside of the regular classroom, is effective in increasing the learning of low-achieving students. | Studies fail to show that pullout instruction enhances learning of low achievers. Further, the pullout approach may actually be detrimental in that students miss important aspects of the regular instructional program. |
| Classroom Variables | | |
| Time-on-Task | More time on learning relates to higher performance for low-achieving students. | Time-on-task, defined as "time spent engaged in relevant tasks on which the student is showing a fairly high success rate," has been shown in a number of studies to be positively related to achievement for low achievers. |
| Curricular Variation | There are certain curricula which are more effective than others in enhancing the achievement of low-achieving students. | Studies have failed to support the superiority of any one curriculum over any other in teaching low-achieving students. Generally, however, approaches oriented toward the teaching of specific skills yield higher performance on traditional achievement tests than ones focusing broadly on cognitive or attitudinal variables. |

EXHIBIT 2 (continued)

| Strategy | Hypothesis | Findings |
|---|---|---|
| Direct Instruction | Programs utilizing direct instruction are effective in promoting the learning of low-achieving students. | Studies suggest that instruction in which the teacher plays the role of a decision maker and manager is effective in teaching basic skills in the early grades. |
| Teacher Feedback | Teacher feedback, defined as use of praise and criticism, has an effect on student achievement. | Studies indicate that student achievement can be affected by teachers' use of praise and criticism. However, the effects of praise may differ depending upon the context in which it is delivered. |
| Teacher Expectations/ TESA | Teacher expectations have an important impact on student achievement. Generally, teachers have lower expectations for minority than majority students. Programs which change expectations can lead to improved student achievement. | Studies show that teachers generally have lower expectations for success in the school setting for students from minority than students from majority groups. These expectations have been linked to actual achievement. Programs like TESA, designed to change teacher behavior, appear promising but are, as yet, unproven. |
| Teaching/Instructional Strategies | Minority students have cognitive or learning styles which differ from those of majority students. The mainstream educational environment tends to be more compatible with the style of the majority student and may even stifle the minority child. Programs aimed at creating educational alternatives which better match the style of the minority child will lead to enhanced achievement. | Research suggests that minority and majority students differ in a number of features related to cognitive style, including visual-spatial preferences, categorization and abstraction preferences, and personality style. Little empirical data exist, however, on whether or not changes in the style of the educational environment will provide a learning situation which is more effective for the low-achieving minority student. |

EXHIBIT 2 (continued)

| Strategy | Hypothesis | Findings |
|---|---|---|
| Student Team Learning | Programs using cooperative learning strategies and reward structures will be effective in enhancing the performance of low achievers and strengthen interpersonal relationships. | Studies show that team learning has a positive effect on self-esteem and relationship skills. The data on academic achievement are mixed. |
| Mastery Learning | Mastery learning employs five basic features: very specific educational objectives, well-defined learning units, complete mastery of each unit before proceeding to the next, ungraded diagnostic tests to provide feedback at the completion of every unit, and, as necessary, appropriate additional instruction. | Research shows the strategy to be very effective for low achievers if properly implemented. Several possible drawbacks, however, have been cited concerning the technique, specifically, whether mastery learning is time efficient, suitable for all levels of students, or appropriate for all subject areas. |
| Out-of-School Factors | | |
| Community Involvement | Programs utilizing the support of the overall community in instruction and learning are effective in enhancing the performance of low achievers. | While some programs have included the community support in the form of tutoring or other education-related activity, the separate results of this factor are unknown. |
| Parental Involvement | Programs involving parents in the education of their children are especially successful in enhancing the learning of low-achieving students. | Data regarding programs for school-age children are limited, and it is not possible to draw definite conclusions regarding the efficacy of parental involvement for older children. |

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The efforts of many members of the Division of Instructional Evaluation and Testing have gone into the building of this document. In addition to the primary reviewers cited on the cover, the contributions of Dr. Kathy Hebbeler, Dr. John Larson, Dr. Floyd Tesmer, and Mr. Joseph Hawkins are gratefully acknowledged. Feedback provided by the Oversight Committee of the Department of Educational Accountability, the Minority Achievement and Participation Steering Committee, and attendees at the Elementary School Administrators Association Conference also was very helpful. Finally, we thank Mrs. Britt-Marie Johnsson for typing the many drafts of this document.

Joy A. Frechtling

Steven M. Frankel

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## INTRODUCTION

The Montgomery County Public School (MCPS) system is currently involved in a broad-based effort aimed at improving the education of its students, especially minority students.[1] The goal is twofold: to enhance the achievement of those who are not doing as well as they might and to increase the participation of all minority students in various school-based activities. These are two areas in which substantial and disturbing discrepancies have been documented (Frechtling, Hebbeler, and Frankel, 1983). In a memorandum to the Board of Education dated June 27, 1983, Blair Ewing, then president of the Board of Education, set the tone for this effort by calling for a comprehensive look at the problem involving teachers, principals, and various supporting curricular and research staff. Reflective of this concern, the Board of Education adopted on September 13, 1983, as one of its five major priorities a statement focusing on minority students. This priority statement reads as follows:

> Implement a special emphasis program which will result in substantial gains in
>
> a) The performance of minority students in the classroom and on standardized and criterion-referenced tests
>
> b) The participation of minority students in
>
> - o Programs for the gifted and talented
> - o Higher level academic courses
> - o Extracurricular activities

Mr. Ewing's memorandum also called for an overview of what has been learned nationwide about educating minority students. This overview was intended to provide a context for both better understanding the problems facing minority students and for assisting staff in finding promising solutions.

In response to this request, the Department of Educational Accountability (DEA) has undertaken a review of relevant literature, looking both at programs that have been developed to improve academic achievement and factors which have been found to enhance learning. Since, however, few studies were found which focus on minority students per se this review was expanded to include programs for low achievers from both minority and majority groups. As might be expected, given the nationwide concern for problems facing low-achieving students which emerged in the sixties and continues (although somewhat abated) to this day, this literature is enormous, even overwhelming. Therefore, rather than attempt to provide a totally comprehensive review of all relevant studies, DEA has chosen to provide a more delimited picture of what has been learned, covering critical areas but presenting only a sampling

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1. The term "minority student" refers to students whose racial/ethnic group membership is classified as black, Hispanic, Asian, or American Indian.

of the studies on which major conclusions are based.[2] This approach allows us to present what we feel is a fair and accurate picture of what is known without producing what would be a review of encyclopedic proportion. If anyone feels that we have shortchanged their favorite study by our selection, we apologize. More importantly, if anyone feels we have left out something critical or misrepresented the findings, we will be glad to talk about it.

## ORGANIZATION OF THIS REPORT

This report is divided into three major sections. The first describes the results of programs implemented both nationally and locally whose goals have been to improve the achievement of low-achieving students, the second presents an overview of factors and strategies which have been hypothesized to enhance achievement, and the third presents some recommendations for educational efforts in MCPS. Before turning to these studies and attempting to assess their relevance for MCPS, however, some important limitations in the data must be pointed out.

First, the available studies focus generally on low-achieving students and provide a very incomplete picture regarding students from different racial/ethnic backgrounds. Where different groups are discussed, the literature tends to speak generally of "minority students" and only infrequently distinguishes among different racial/ethnic groups. To the extent that one believes that different factors are important in development for students from different racial/ethnic groups and that different approaches are likely to be differentially effective, the findings are hard to interpret.

Second, in many of the studies, the influence of race/ethnicity is not separated out from that of socioeconomic status (SES). It is not possible, therefore, to differentiate between the effects of race/ethnicity and SES in interpreting many of the findings. This becomes an important delimitation if it is believed that the factors which influence the achievement of students from low SES backgrounds differ from those influencing the achievement of students from different racial/ethnic groups.

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2. In reviewing the literature, DEA staff used a variety of sources. Literature searches were obtained from ERIC and the Educational Research Service, indices of major journals were examined, researchers associated with relevant lines of research/evaluation were contacted, and federal program managers were consulted. In selecting articles or studies for inclusion, preference was given to ones which contained empirical data, had been published in the last fifteen years, and were of good technical quality. A particular effort was also made to review and include studies meeting these criteria which represent the views and findings of minority researchers. Continued efforts to monitor relevant research areas are planned.

Third, the majority of studies assume that what can be called the "mainstream Anglo-American educational environment" is appropriate for all children and that the children should be judged by their success in this environment. Failure to achieve is thus interpreted as some deficit on the part of the student, and explanations for this failure frequently point to inadequacies in the home. While this has been the predominant interpretation offered in the literature to explain differences in student performance, it is not the only one that can be entertained. An alternative explanation is that the problem lies in the educational environment. While we have attempted to include both these points of view in the overview, an imbalance clearly exists which is due to the imbalance in the literature as a whole.

Fourth, in many cases the studies are based on analyses of student performance in the elementary grades. The extent to which the findings are generalizable to older students remains a question.

## Section I

## INTERVENTION PROGRAMS

### OVERVIEW AND SUMMARY OF FINDINGS

In this section, programs to improve student achievement at the preschool and school levels are described and their results are summarized. The intervention programs are divided into three areas: a) federal/national programs, b) private school programs, and c) public school district programs.

Analysis of available reports indicates that the results of these programs are generally encouraging. However, available data are not complete enough to allow firm conclusions to be drawn regarding either program impact or what about a particular program accounts for performance gains. Much of the reported research looks more at low achievers generally than minority students per se. Nonetheless, it is possible to draw some preliminary conclusions regarding the effects of intervention programs.

First, studies of preschool programs and federally supported programs such as Chapter I/Title I[1] indicate that these programs do help low-achieving students. Program participants in the elementary years appear to have made measurable gains in achievement test scores and show a decreased need for special services. Yet, they remain below grade level in achievement. Second, private school impact cannot at this time be thoroughly assessed because the needed evaluation data are not available. Preliminary data indicate that private schools can be effective in educating minority students, but whether they are more successful than public schools remains debatable. Third, public school districts appear to be making slow but steady progress toward increasing student achievement. Special programs appear to be paying off in achievement gains which emerge in the context of a broad-based effort in which many supports are provided.

Evaluation of the content of these programs suggests that there are many different strategies that hold promise for increasing student achievement. Parents providing a supportive home learning environment, high teacher expectations with a strong academic focus and increased uninterrupted learning time, principal leadership with lowered class-size ratio, and safe, orderly school environments as well as a systemwide ongoing assessment supportive of learning are factors associated with increased student achievement. There is little evidence to suggest different approaches for low-achieving minority students than for low-achieving majority students.

Exhibit 1 provides an overview of the intervention strategies employed by a) federal/national programs, b) public school district programs, and c) private school programs. The various programs are described in greater technical detail following Exhibit 1.

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1. Research under Title I programs is referred to in this report as Chapter I programs due to federal revision in program name.

EXHIBIT 1

Overview of Intervention Strategies

| Program | Approach | Findings |
|---|---|---|
| **Federal/National Programs** | | |
| Head Start and Other Early Education Programs | Programs for the low-income preschool child employing a wide variety of approaches, including in various combinations the enhancement of self-concept and motivation to learn, basic skills instruction, problem-solving skills instruction, and parental involvement. | Studies show that programs produce short-term gains in intelligence and academic achievement which diminish over time. Participants appear to perform better in school, at least in the primary grades, than comparable children not served. However, Head Start participants continue to score below norms on tests. |
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EXHIBIT 1 (continued)

| Program | Approach | Findings |
|---|---|---|
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| Independent Black Schools<br><br>(Lower East Side International Community School, Marva Collins' West Side Preparatory School, Muslim schools) | Alternative schools characterized by high expectations, high motivation, strong discipline, structured instruction, and a match between the culture of the student and the school environment. | Data attesting to the success of these schools are basically anecdotal in nature, and no well designed, empirical studies of the programs could be found. |
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| Program | Approach | Findings |
|---|---|---|
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EXHIBIT 1 (continued)

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|---|---|---|
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## FEDERAL/NATIONAL PROGRAMS

In this section, three types of programs are examined: federally supported programs aimed at early intervention, compensatory programs serving school children, and Operation PUSH-EXCEL--a privately developed program nationwide in scope. Excluded from this review were efforts whose aims were not primarily to improve achievement. In this category, we place magnet programs, busing programs, and related efforts whose primary aim was to enhance desegregation.

### EARLY EDUCATION APPROACHES TO IMPROVING MINORITY STUDENT PERFORMANCE

#### Overview

The findings of research on Head Start and other early intervention programs over the last two decades are relatively consistent. Low-income children who have participated in preschool programs tend to show immediate cognitive gains as indicated by higher IQ and readiness test scores than similar low-income children without such preschool experience. However, these program graduates still score below national norms on standardized tests. Most studies report that cognitive gains diminish within five years after the preschool intervention so that by the third or fourth grade, there are no longer any IQ differences between program graduates and nonparticipants. Yet, children who have participated in preschool intervention programs like Head Start appear to be more successful in school than other low-income children, as indicated by fewer placements in special education and fewer grade retentions.

#### The Research

Educators in the 1960s noted that children from low-income families as a group achieved very poorly in schools and that, on the average, the further poor children went in schools, the further below the norms they scored on standardized tests. In a review of early intervention studies, Hodges and Cooper (1981) summarized the predominant short-term trends in the findings:

- Children's initial formal preschool experience was associated with an increase in scores on standard intelligence tests or readiness inventories.
- Once the children left the experimental project, the mean of these scores dropped, so that frequently by the third grade, the mean score was close to the original mean score of the group before intervention.
- If there was no further intervention after preschool, and the control and intervention groups experienced standard primary education, then the experimental group's mean IQ scores gradually descended to the preintervention level.

Head Start was launched in the summer of 1965 as a federally funded, community-run preschool program for low-income children. Since its inception, Head Start has had objectives in the areas of health, social development, parent development, and community development; however, its

impact on cognitive development has been the focal point of evaluations.

Belief about what evaluations of Head Start show has shifted at least three times since 1965 (Datta, 1979). Between 1965 and 1968 the findings were interpreted as meaning that Head Start had definite immediate and possibly durable benefits for children. From 1969 to 1974, the 1969 Westinghouse report, the first national evaluation of Head Start as it existed in the field, was generally interpreted as proving that Head Start failed by the criterion of lasting effects and as repudiating earlier reports of immediate benefits. Since 1975, the climate of opinion has changed. Evaluations are being interpreted as indicating both immediate and long-term effects.

The Westinghouse Report

The first large-scale study to evaluate the net impact of Head Start participation on primary school achievement was the now well-known Westinghouse/Ohio State evaluation (Cicirelli, 1969). This national evaluation focused on children who attended Head Start in the summer programs of 1965 through 1968 and a small sample of children who attended the early full-year programs. These children were tested for the first time in the fall of 1968 when they were in the first, second, or third grade. Although the study did not measure the immediate effects of summer or year-long programs, it reached the following conclusions regarding intermediate gains in cognitive development:

- Summer programs appeared to be ineffective in producing any gains in cognitive development that persisted into the early elementary grades.
- Full-year programs appeared to be marginally effective in producing gains in cognitive development that could be detected in first, second, and third grade.
- Head Start children, whether from summer or full-year programs, still appeared to be considerably below national norms based on standardized tests of language development and scholastic achievement, while performance on school readiness at first grade approached the national norm.

The Westinghouse data have been widely criticized on methodological grounds, including prematurity of the evaluation, inadequacy of the research design (especially regarding comparability of the comparison group), weakness of the measurement instruments, and failure to follow children further in their school careers. Hodges and Cooper (1981) suggest that the results of the Westinghouse study should have been expected because Head Start projects from all over the country were combined for analysis, thus allowing the ineffective projects to cancel the impact of the effective projects with the ultimate result of no difference.

Experimental Studies

The controversy surrounding the Westinghouse report led the federal government to support a more experimental approach to Head Start in which different early education models were implemented in different sites and results were compared. Head Start Planned Variation resulted and was

implemented in fiscal years 1969, 1970, and 1971. Evaluations focused both on the relative effectiveness of the different educational models and the overall impact of Head Start on children's cognitive development. Hodges and Cooper (1981) summarized the results of three national evaluations regarding overall effectiveness on children's cognitive functioning:

- On measures of academic achievement and general cognitive development, the mean gains of all the Head Start children in both model and regular classes were considerably larger than those attributable to usual maturational development among such children (Bissell, 1971).

- The Head Start experience doubled or tripled the natural rate of growth in children's achievement test scores over the seven or eight months of the Head Start program and raised the participants IQ scores roughly 0.35 standard deviations (Smith, 1973).

- With respect to a wide variety of cognitive skills, Head Start was effective in accelerating the cognitive growth rate of disadvantaged preschoolers (Weisberg, 1974).

The controversy regarding the Westinghouse report also raised a more basic issue: what actually was known about the impact of any type of preschool intervention program. The Department of Health, Education and Welfare consequently requested a review of the findings of small, controlled long-term evaluations of preschool intervention programs including Head Start programs. This review included information on the elementary school performance of the "graduates" of the well-designed experimental programs from the 1960s and resulted in the often-cited publication of "Is Early Intervention Effective?" by Bronfenbrenner (1976). He arrived at the following conclusions regarding the cognitive impact of preschool intervention in group settings, based on 12 programs serving children from one to six years of age:

- Almost without exception, children showed substantial gains in IQ and other cognitive measures during the first year of the program, attaining or even exceeding the average for their age.

- Neither early entry into the program (from age one) nor a longer period of enrollment (up to five years) resulted in greater or more enduring cognitive gains.

- By the first or second year after completion of the program, sometimes while it was still in operation, the children began to show a progressive decline, and by the third or fourth year of follow-up had fallen back to IQ's in the lower 90's and below.

- The period of sharpest decline occurred after the child's entry into regular school. Preliminary data from the Follow Through program suggested that this decline might be offset by the continuation of intervention programs into elementary school.

Follow Through

Many reviewers of the Head Start programs concluded that quality Head Start projects were producing immediate gains for children but that the schools were letting these gains erode through inadequate continuity with the preschools. In response to this concern, the program Follow Through was designed to continue intervention through the third grade. Like Head Start, Follow Through involved not only educational intervention but also medical, dental, nutritional, and social service programs and guidance and psychological services.

In Follow Through, a number of prominent educators, advocating various educational theories and strategies (models), were funded to become "sponsors" and to apply their insights in selected school districts (sites).

Although each model seeks to develop in children a wide variety of skills and attitudes, the models can be divided into three broad categories according to their areas of primary emphasis (Stebbins et al., 1977):

- o Basic Skills Models which focus primarily on the elementary skills of vocabulary, arithmetic computation, spelling, and language
- o Cognitive Conceptual Skills Models which place primary emphasis on more complex "learning-to-learn" and problem-solving skills
- o Affective/Cognitive Models which focus primarily on self-concept and attitudes toward learning and secondarily on cognitive conceptual skills

The most recent and probably the most contested national evaluation report was written by Stebbins et al. (1977). They examined the effects of a variety of compensatory education approaches for improving the performance of disadvantaged children and reported the following five main findings regarding cognitive outcomes:

- o The effectiveness of each Follow Through model varied substantially from site group to site group; overall model averages varied little in comparison.
- o Models that emphasized basic skills succeeded better than did other models in helping children gain these skills.
- o Where models put their primary emphasis elsewhere than on the basic skills, the children tended to score lower on tests of these skills than they would have done without Follow Through.
- o No type of model was notably more successful than the others in raising scores on cognitive conceptual skills.
- o Most models were more effective during kindergarten and first grade than during second and third grade.

Although the overall impact of Follow Through was not the focus of the evaluation, the authors concluded that "in general, Follow Through's . . . compensatory interventions do not seem to have been reliable tools for

raising the average test scores of groups of disadvantaged children" (Stebbins et al., 1977).

Although research interest in and funding of Follow Through have dissipated, Head Start continues to be a popular, well-funded federal program due primarily to two recent and well-publicized research studies which have examined the long-term effects of preschool intervention: (1) the follow-up research of the Perry Preschool Project (Schweinhart and Weikart, 1980) and (2) the Consortium for Longitudinal Studies (Lazar and Darlington, 1982), representing a dozen prominent researchers including the Perry Preschool group. The conclusions of these studies are reviewed below.

Long-term Longitudinal Studies of Preschool Intervention

The Perry Preschool Project was one of the original pre-Head Start experimental early intervention projects that helped inspire the development of Head Start with findings of short-term cognitive gains. The project was designed as a longitudinal experiment to reveal the effects of early intervention on disadvantaged children from age 3 to 15. The sample consisted of 123 black children from low-income families who were randomly assigned to an experimental or control group during the years 1962 to 1965. Children in the experimental group attended a group preschool program 12 1/2 hours a week and were visited at home with their mothers 1 1/2 hours a week for the one or two years of the program. A summary of the study findings regarding cognitive and school performance outcomes over the course of the longitudinal study follows:

- Improvement in the cognitive ability at school entry of the children who attended preschool was indicated by their increased IQs during kindergarten and first grade, resulting in a 10-point IQ difference between the experimental and control children.

- While differences in measured aptitude (IQ) gradually diminished after the intervention ended, differences in academic achievement between the experimental and control groups actually increased over time. Greater school achievement for the experimental children was shown by higher achievement test scores during elementary school and substantially higher scores at eighth grade when compared to control group children.

- Despite this apparent cumulative achievement acceleration among the experimental children, their achievement average was still far below the national norm.

- Children who attended preschool spent fewer years receiving special education services throughout their years in the public schools.

Supporting the Perry Preschool Project findings are the recent collaborative efforts of 12 intervention investigators (including the Perry Preschool group). They pooled their original data and conducted a collaborative follow up of the original subjects, who were ages 9 to 19 at the time. Lazar and Darlington coordinated the data collection and supervised the joint analyses.

The cognitive results are summarized in the following (Lazar and Darlington, 1982):

- Children who attended preschool programs were significantly more likely to meet their school's basic requirements. That is, controlling for family background factors and initial ability, program graduates were significantly less likely to be assigned to special education classes and less likely to be retained in grade than were controls.

- Children who attended early childhood programs surpassed their controls in IQ for up to three or four years after the program.

- There was some evidence that program graduates performed better on achievement tests than did controls. This was true for both math and reading at Grade 3 and only for math at Grades 4 and 5; and by Grade 6, there were no significant group differences.

Together, these studies reveal that participants in well-designed preschool programs manifest important lasting benefits into elementary school and, in some cases, into high school. Although the early gains in IQ diminish by the third or fourth grade and achievement test gains are not consistently maintained, youngsters who participated in preschool intervention programs were more likely to succeed in school, as indicated by avoiding special education placement and keeping on grade level with their peers. These studies provide compelling testimony that long-term benefits of preschool programs are attainable.

Head Start Synthesis Project

To provide direct evidence of the impact of Head Start, the Head Start Synthesis Project was initiated by the Administration for Children, Youth and Families in 1981 (Collins, 1983; Harrell, 1983). This project is assembling and analyzing the findings of all Head Start research and evaluation studies from 1965 to 1984. The impact of Head Start is being assessed by using the traditional literature review as well as a form of meta-analysis which applies statistical techniques to analyze findings <u>across</u> many studies in much the same way that data is traditionally analyzed <u>within</u> studies.

Preliminary results of the meta-analysis echo the findings of the literature review, particularly in the area of cognitive development. The data indicate that Head Start programs have grown more effective over the years. Effect sizes calculated for children who attended Head Start since 1970 are nearly twice the size of cognitive gains for children who attended Head Start in the start-up years of 1965-69. A recently released preliminary report (Harrell, 1983) yielded the following information regarding short-term and intermediate gains:

Effect Size Measured in Standard Deviations

| | Studies from 1965-69 | 1970-81 |
|---|---|---|
| Short-term gains (measured at end of Head Start year) | .39 | .70 |
| Intermediate gains (measured up to three years after Head Start) | .13 | .43 |

Educational researchers generally consider effect sizes of .25 to .50 standard deviations as educationally meaningful (Bissell, 1971; Harrell, 1983). The data from this meta-analysis thus appear to suggest that Head Start has had a significant impact on the cognitive development of its graduates, particularly since 1970. Collins (1981) attributed the larger effect sizes after 1970 to better programs. But once again, these data also suggest that the cognitive effect of Head Start is more pronounced when measured immediately after Head Start and subsequently diminishes. The project staff has yet to complete their meta-analysis of longer-term Head Start effects. We must await further analysis of the longitudinal studies to see what happens to the effect sizes beyond the second grade.

Conclusions

A review of the preschool intervention research suggests that preschool intervention programs like Head Start "work" in terms of producing short-term gains in intelligence and academic achievement and longer-term success in school among low-income participants. But these programs fall far short of the original hopes that they might raise the performance of poor children to the level of their middle-class peers.

## CHAPTER I AND OTHER COMPENSATORY EDUCATION APPROACHES TO IMPROVING MINORITY STUDENT PERFORMANCE

### Overview

Recent findings suggest that compensatory education programs like Chapter I can result in greater than expected achievement gains among program participants relative to similar low-income, low-achieving students not participating in compensatory education programs. These effects hold over the school year as well as over the calendar year with no absolute "drop-off" among compensatory education participants during the summer months. However, this Chapter I impact has not been sufficient to eliminate the achievement gap between disadvantaged and advantaged children within a reasonable number of years.

### The Research

In 1965, Congress enacted Chapter I of the Elementary and Secondary Education Act, adopting the following policy:

> In recognition of the special educational needs of children of low-income families and the impact that concentrations of low-income families have on the ability of local educational agencies to support adequate educational programs, the Congress hereby declares it to be the policy of the United States to provide financial assistance to local education agencies serving areas with concentrations of children from low-income families to expand and improve their educational programs by various means which contribute particularly to meeting the special educational needs of educationally deprived children. (Archambault and St. Pierre, 1980)

While early national evaluations of Chapter I generally reported little overall impact of the program, more recent national evaluations--the National Institute of Education (NIE) Compensatory Education Study and the Sustaining Effects Study--indicate the possibility of sustained effects. The results of these evaluations suggest that although Chapter I has been unable to equalize the achievement of the nation's poor and children with its middle-class children, it has accomplished the modest goal of improving the achievement level of participating children beyond that of similar nonparticipating children. The results of these national evaluations are reviewed here.

Early Evaluations of Chapter I

Beginning in 1965, local school districts instituted a wide variety of projects with Chapter I funds.

In a synthesis of the findings from federal studies of Chapter I during the period 1965-1975, McLaughlin (1977) concluded that the information on overall program impact, as measured by increased achievement gains among program participants, had been less than adequate to determine Chapter I effectiveness.

The inadequacy of data has been attributed to a number of problems in the way Chapter I has been implemented and evaluated. These problems include:

- Use of state and local evaluation reports to construct a national picture of Chapter I effectiveness
- Diversity in the population of students participating in the early Chapter I programs due to loose eligibility requirements
- Diversity of the services provided across programs
- Measurement problems within the evaluations

These problems led Congress to call for a more systematic evaluation of Chapter I from the federal level. The result was two studies: the Compensatory Education Study, directed by the National Institute of Education (NIE), and the Sustaining Effects Study, directed by the Office of Education.

The NIE Compensatory Education Study

The Education Amendments of 1974 instructed NIE to conduct a study of the purposes and effectiveness of compensatory education programs. In one of the studies, the Instructional Dimensions Study (IDS), NIE selected programs for study which exemplified only certain instructional techniques. Since the programs examined were purposely selected for certain instructional features and included only programs that would be stable during the school year, these programs cannot be considered a representative sample of Chapter I reading and math instruction. On the other hand, the study did suggest potentially positive effects of selected Chapter I programs on student achievement.

NIE examined the achievement test scores of first and third grade compensatory education students receiving special instruction in the basic skills in 400 classrooms from 100 schools in 14 school districts during the 1976-77 school year. In general, the results of IDS were encouraging regarding the effectiveness of compensatory instructional programs. First graders in the sample made average gains of 12 months or 12 percentile points in reading and 11 months or 14 percentile points in math. Third graders gained 7 months or 9 percentile points in reading and 12 months or 17 percentile points in math. The gains observed in this sample over the 7-month period between fall and spring testing exceeded those commonly reported in previous large-scale compensatory education studies, and they are generally greater than the gains typically made by similar students not participating in such programs.

When the achievement gains of 4,417 compensatory education students were examined according to the setting in which they received compensatory instruction, pullout or mainstream,[2] the findings favored the mainstream setting in three out of four comparisons, with no difference apparent in the fourth comparison (NIE, 1978).

Attempts to uncover particular instructional practices associated with increased achievement were not successful. Students appeared to be doing equally well across a variety of curricular approaches.

The IDS included a follow-up component in which fall test data from a subsample of approximately 3,000 IDS participants were examined to determine whether the apparent effectiveness of the compensatory instruction remained constant over a full year (NIE, 1978). The results indicated that compensatory students can maintain impressive gains over a 12-month period. Furthermore, comparison of test scores for compensatory and noncompensatory education students indicated that changes in achievement over the summer were quite similar. In addition, a preliminary examination of the effects of summer school participation on learning suggested that the summer programs offered by the districts studied did not increase the achievement of compensatory education students.

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2. Pullout instruction was defined as supplemental instruction that is delivered to students outside the regular classroom. Mainstream instruction is supplemental instruction within the regular classroom.

This finding of sustained achievement gains over the summer is supported by the most recent large-scale national evaluation of Chapter I effectiveness, the Sustaining Effects Study (SES).

The Sustaining Effects Study (SES)

To date, the most comprehensive national study of compensatory education is the Sustaining Effects Study which began in 1975. It is actually a series of substudies on the longitudinal effects of compensatory education, its cost effectiveness, the characteristics of compensatory education students, summer-school compensatory education programs, and successful practices in high poverty schools. The substudies on longitudinal effects and successful practices relate to the topic of improving minority student performance and thus will be reviewed here.

The Longitudinal Study: The Longitudinal Study sample was drawn from the overall SES sample and included 177 schools with approximately 50,000 students in the first year and about 25,000 students in the third year. The study assessed the growth of children in reading and math in the fall and spring for three consecutive years. This growth was related to instruction by measuring the amount and kind of instruction received by each student in reading and math as well as collecting information from principals and teachers on their practices of instruction and teaching.

Based on the first year data from the study, the major findings were that compensatory services have small but positive impacts on achievement--mainly at the primary grades for reading but in all the elementary grades for math (Wang et al., 1981). Chapter I children generally made greater gains in reading and math than their disadvantaged counterparts not enrolled in compensatory education programs. Looking specifically at educational services and processes, the principal findings were:

- Regular instruction and tutor/independent work had small positive effects on achievement growth, while special instruction (small groups, special teachers, aides) did not.

- Achievement seemed to benefit from use of more experienced teachers, more frequent feedback on academic progress, and more teacher-time devoted to preparation. It was hampered by classroom disturbance and by high concentrations of low-achievers in the school.

- There was no strong evidence found for the effectiveness of increased instructional services nor were services found differentially effective for low and high achievers.

The Longitudinal Study also looked at the effects of discontinuing compensatory services on students' subsequent achievement. Kenoyer et al. (1981) reported that each year about one-third of program participants discontinued their compensatory education services, usually due to improved achievement. Although these students subsequently received reduced instructional services, their educational growth did not revert to previous low levels or to the levels of current, comparable students. Students no longer in compensatory education showed greater achievement gains during the first year out of the program than they did in the previous year when they

participated in the program. No particular instructional services could be identified that accounted for this continued growth. On the other hand, these compensatory education "graduates" showed lesser achievement growth than continuing program participants and nonparticipating regular students.

Zagorski et al. (1981) concluded that although gains due to Chapter I were not enough to suggest elimination of the achievement gap between disadvantaged and advantaged students within a reasonable number of years, they were sufficient to slow down its widening and in some cases to reduce it.

Successful Practices in High-Poverty Schools Study: The major objective of this substudy was to identify and describe the instructional practices that were effective in improving the reading and math skills of educationally disadvantaged students. Because educational disadvantage is closely linked to economic deprivation, the study was limited to high-poverty schools. The sample included the 55 schools from the Longitudinal Study with the highest poverty index based on parents' education and students' free-lunch participation. Grades 2 and 5 were examined. Lee et al. (1981) reported findings based on observations of instruction and interviews with principals and teachers revealing the following factors associated with achievement gains:

- Greater achievement occurred in schools where the principal and teachers were more experienced and worked together in harmonious and coordinated ways.

- The more attentive students were during lessons, the better they performed on the achievement tests. Thus, it was not the hours of instruction alone that made the difference, but the hours in which students were attentive to purposeful instruction.

The following practices were found to contribute to the coordination of instruction:

- More time spent in instruction and active learning and less time spent in managing students' behavior

- Greater and more flexible use of specialists and a higher staff: student ratio

In addition, it was found that student attentiveness and on-task behavior were enhanced by the following factors:

- A greater percentage of teachers' time spent in instructional activities rather than noninstructional ones (e.g., instructional management, behavioral management)

- Teacher responsibility for fewer students

Evidence From Other National Studies

In addition to the findings of the IDS and the SES regarding the positive impact of Chapter I on student participants, there is also evidence from the 1970-80 decade that students in Chapter I schools are improving at a faster rate than students in non-Chapter I schools. Between 1970 and 1980 the National Assessment of Educational Progress (NAEP) tested a sample of the nation's 9-, 13- and 17-year-old children in the area of reading at three intervals--the 1970-71, 1974-75, and 1979-80 school years. Included in the NAEP report was the finding that students in Chapter I eligible schools made significantly greater gains in reading achievement between 1970 and 1980 than students in non-Chapter I eligible schools at all three grade levels tested (NAEP, 1981).

Conclusions

The findings of both the Instructional Dimensions Study and the Sustaining Effects Study suggest that compensatory education programs like Chapter I can improve the performance of program participants relative to similar low-income, low-achieving students not participating in compensatory education programs. These effects hold over the school year as well as over the calendar year with no absolute "drop-off" among compensatory education participants during the summer months. In addition, the Sustaining Effects Study has shown that these small positive effects remain over three years and that compensatory education is relatively more effective at the primary grades. The discrepancy in findings between these two national evaluations in showing a small positive impact on student achievement and the earlier national summary evaluations of Chapter I which found little or no impact has been attributed to better designed studies which examined less diversely implemented programs and to programs which employed more educationally sound instructional practices (Stickney and Plunkett, 1982). But the impact of Chapter I has not been sufficient to eliminate the achievement gap between disadvantaged and advantaged students within a reasonable number of years.

PUSH-EXCEL: A PRIVATELY DEVELOPED NATIONAL APPROACH TO IMPROVING MINORITY STUDENT PERFORMANCE

Overview

The Reverend Jesse Jackson founded People United to Save Humanity (PUSH) in 1971 to promote black economic and political strength. PUSH sprang from Operation Breadbasket, an economic arm of the Southern Christian Leadership Conference. PUSH-EXCEL went beyond the educational strategy of improving curriculum and instruction to enhance student performance by adding the ingredients of parental and community involvement. PUSH-EXCEL was built on a solid framework of socialization theory encouraging congruence among such socialization forces as parents, peers, teachers, church officials, and other community members in working together to develop the motivation and habits which would enable the child to succeed in society's major institutions (Eubanks and Levine, 1977).

A recently completed three-year evaluation of PUSH-EXCEL has documented little, if any, impact of the project on students, primarily due to minimal and/or uneven implementation. PUSH-EXCEL has nontheless received

considerable attention as a potentially effective movement in the schools to motivate students towards greater academic achievement.

The Research

PUSH-EXCEL began in 1975 as a national movement to stimulate excellence in the schools and subsequently received local, corporate, membership, and foundation funding to develop pilot programs in Chicago, Kansas City, and Los Angeles Schools. These programs sought to produce academic gains first by improving the climate of the schools and the self-image of minority-group students (Jackson, 1979). Jackson made appearances before student audiences emphasizing student self-discipline and the work ethic. An example from his speeches follows:

> We keep saying that Johnny can't read because he's deprived, because he's hungry, because he's discriminated against. We say that Johnny can't read because his daddy is not in the home. Well, Johnny learns to play basketball without daddy. We do best what we do most, and for many of our children that is playing ball. One of the reasons Johnny does not read well is that Johnny doesn't practice reading. (Eubanks and Levine, 1977, p. 384.)

These appearances were followed up in participating schools by PUSH-EXCEL programs designed by the individual schools or school systems to accomplish such outcomes as increased attendance, decreased tardiness, and recognition of academic achievement (Jackson, 1979).

Federal involvement began in 1978, when the Department of Health, Education and Welfare awarded PUSH-EXCEL approximately $445,000 in grants for program development and support of existing projects. Subsequently, formal demonstration projects in six cities received $2.8 million over a three-year period beginning in 1979. Concurrent with PUSH-EXCEL's formal implementation through these demonstration projects in 44 schools, the National Institute of Education (NIE) contracted the American Institutes of Research to conduct an evaluation of program implementation and impact (Murray et al., 1982).

The major goals of PUSH-EXCEL are to enhance student motivation and sense of responsibility, to improve the atmosphere for learning, to increase the opportunity to obtain a quality education, and to improve academic achievement. The program proposes to accomplish these goals through "total involvement" which is defined as massive participation in the educational process by all concerned--parents, schools, communities, and the students themselves (Murray et al., 1982).

There were four intermediate goals to improve the achievement levels of its student participants:

- To increase the students' motivation to achieve
- To increase the students' sense of responsibility for learning and for their own goals, actions, and lives
- To improve the school and home atmosphere to be more conducive to

achievement

- To increase opportunity for students which would provide resources whereby achievement is possible

The fourth goal is not one that students can achieve independently, but rather it involves collateral action by the community.

Each activity that PUSH-EXCEL undertook was directed at one or more of these goals, and together they were to produce changes in achievement. Achievement measures such as improved grades, higher test scores, or more students attending college were all expected products at the end of a long chain of intermediate events. The most useful measure of whether the program was succeeding in its initial years was not whether achievement was occurring but whether the hypothesized preconditions for achievement were established.

The national evaluation of PUSH-EXCEL evolved as both a formative and a summative evaluation. Because the evaluators recognized early the need to first develop a program, the evaluation became part of the program development process. The evaluation was designed to measure intermediate progress toward achieving the program's goals by students, parents, and teachers and to feed back this information to the program for subsequent development.

The sample included approximately 420 eighth and tenth grade students from five schools—one junior high school and four high schools—in two cities (Murray et al., 1981). Impact data were collected during the 1979-80 and 1980-81 school years. Findings regarding both implementation and impact were not encouraging. First, it was found that students in the sample did not experience a uniform program. Participation in PUSH-EXCEL activities was largely the individual student's decision and activities varied widely across schools.

Second, the analysis reported in the NIE evaluation did not indicate a general pattern of improvement. Although efforts to achieve future goals increased significantly in four out of five schools, there were no changes that could not be most easily interpreted as random fluctuation (Murray et al., 1982).

In order to gain additional information on the program's promise, student outcomes were also examined in relation to level of participation as measured by the number of PUSH-EXCEL activities in which students reported participating. While levels of participation were generally low (an overall mean of 1.5 activities during the first year of the program and of 2 activities during the second year), it was found that level of participation had a statistically significant effect on the following outcomes:

- Certainty of graduating (M)
- Belief in personal efficacy (M)
- Lowered suspension rates at one junior high school (A)
- Efforts to achieve future goals (IA)

- Grade point average (IA)

However, level of participation was found to be unrelated to a number of other outcomes.

The evaluators reported the following:

> Our best estimate of the results is that, when students participate in many of the kinds of activities that PUSH-EXCEL mounted, some of them respond in some of the ways that PUSH-EXCEL hoped . . . the problems associated with mounting large numbers of successful activities and engendering broad participation in them are not solved, nor is it clear that solutions are possible. It leaves . . . [us] roughly where we started: with optimism that a successful PUSH-EXCEL can affect some students over the long haul in ways that Jackson's speeches affected them over the short haul, but without a case in which this was demonstrated to be feasible for a school as a whole or even for large numbers of students within a school. (Murray, et al., 1982, p.99)

In an interim evaluation report, Murray et al. (1980) concluded:

> . . . PUSH-EXCEL may have succeeded as a "movement" based on an inspirational message that can motivate students, parents, and teachers to achieve high educational goals; however, as a "program," it lacks specifics whereby its objectives can be achieved, and operationally it is still in a developmental mode. (p. 1)

## PROGRAMS DEVELOPED BY PRIVATE SCHOOLS

In this section, we examine programs developed by private schools to meet the needs of low-achieving students. Reviewed are both programs offered by community-based schools and ones offered by private parochial institutions.

The evidence available appears to be at best only suggestive regarding the effectiveness of private schools in educating minority youth. While the popular literature indicates that community-based programs are valuable, there are little hard data available to support the claims. The research literature is more convincing, but the studies have only recently emerged and are currently the subject of much debate. Nonetheless, findings suggest that factors listed in the literature as characteristic of effective schools in general are also operating in the successful private schools. These factors are strong principal leadership, a pervasive and broadly understood instructional focus, an orderly and safe environment, high teacher expectations, and ongoing assessment of student progress.

COMMUNITY-BASED SCHOOLS

## Overview

There have been recent suggestions in the media and in black public affairs journals that community-based private schools may be more effective than public schools in educating minority children. However, these claims are based primarily on anecdotal reports, and empirical studies of such efforts have not been conducted.

## The Research

In the July/September 1983 issue of Tony Brown's Journal which focuses on black education, the success of poor, urban black children in independent black schools is highlighted. Among the schools cited for their accomplishments are the Muslim schools and two large-city private schools: the Lower East Side International Community School in New York City and Marva Collins' West Side Preparatory School in Chicago.

### The Muslim Schools

The Muslim Schools, originally called the Muhammad University of Islam, were first opened in the United States in 1934 by Sister Clara Muhammad, a mother concerned that the public school system was providing her children an inadequate education. Today, known as the Sister Clara Muhammad Schools, the Muslims operate 30 elementary and secondary schools throughout the country and a Teachers' College in North Carolina. Although a search of the education literature revealed no citations on Muslim schools in the last 15 years, Brown (1983) offers one example of their accomplishments. In a recent statewide spelling competition, the students of Sister Clara Muhammad School in New York won first through fifth places.

### The Lower East Side International Community School (LESICS)

LESICS was founded in 1976 by six black parents in response to the poor performance of blacks and Puerto Ricans in the New York City Public Schools. Their mission was to provide an alternative education for urban black children whose families could not afford private schools but did not want to keep their children in public schools. Today LESICS charges about $1,000 in annual tuition for its 115 students, preschool through eighth grade, and is staffed by six certified teachers.

Brown (1983) cited the following decisive gains in reading and mathematics during the school's first year:

- The fifth graders, as much as two years behind in reading and math in September, gained three years, five months in reading and two years, two months in math by June.
- The sixth graders gained two years, one month in reading and one year, four months in math.
- Two-thirds of the sixth grade students were reading above grade level at the end of the year.

When contacted, LESICS said that the data reported by Brown were the only data they had collected which indicated the school's effectiveness.

Brown provided the following insights regarding the LESICS program:

- The curriculum is structured to provide a quality education while reinforcing ethnic heritage and encouraging positive character development.
- Students are required to master oral and written English, to attain competence in mathematical and computer concepts, and to take two foreign languages.
- The school also provides training in dance and music.
- The school philosophy emphasizes guidelines, structure and boundaries, as well as support, love, parent authority, parent-school communication, persistence and self-sacrifice.

Marva Collins' West Side Preparatory School

Marva Collins has received considerable media attention as a disenchanted public school teacher who founded a private school for black children in the heart of Chicago's inner city. Her efforts have resulted in a celebrity as well as expert status as indicated by the 1981 television drama about her school, her appearances on the "Phil Donahue Show," and her Congressional testimony on educational issues. Despite the high-power media attention that Marva Collins and her school have received, a search of the education literature revealed little published achievement data on the school and only three articles examining the school's program. In a recent interview, Collins (1982) reported that her school's four-year-olds can read by Christmas and that sixth graders as much as four years below grade level at school entry score grade equivalents of 7.2 to 11.7 on midyear standardized tests.

West Side Preparatory School, with an enrollment of 200 children, ages 4 to 13, is staffed by five teachers including Marva Collins. The curriculum is characterized as traditional, with heavy doses of reading and writing and an emphasis on drill and memorization (Collins, 1982). Some critics have attributed the school's success solely to the strong personality of Marva Collins. Collins (1982), on the other hand, points out that the school's other teachers achieve similar results in the classroom. Collins also notes that her students are successful in spite of a lack of parental support, which contradicts one of the explanations often cited for private school success--the greater involvement of parents.

The school's success is most frequently attributed to such factors as the use of positive reinforcement, a well-organized traditional curriculum, adequate time on task, high teacher expectation, high motivation, good discipline, a genuine concern for children, and just plain good teaching. Hollins (1982), in an analysis of Collins' instructional activities and presentation as well as her motivational strategies, suggested that the school's success is based on a cultural congruence between the instructional activities and the student's experiences outside of school. Although Hollins' impressions of Collins' instructional methodology were based solely

on Collins' own portrayal of her teaching methods and philosophy, rather than on objective observation, Hollins' analysis offers some interesting insights. Her examination of Collins' instruction revealed interaction patterns commonly found in the more traditional black family settings, friendship groups, and religious settings.

Use of Black Family Attributes: Collins' classroom, like traditional black family settings, provides a climate fostering cooperation, flexibility, collective responsibility, autonomy, and strong adult leadership. For example, competition is minimized by not giving letter grades or testing children on a regular basis, and by having children edit and correct their own work. Pupils work in a cooperative, complementary fashion, often in dyads or triads, with the notion of collective work and responsibility. The teacher is clearly in charge of the classroom, but children are made to understand that it is their responsibility to learn; and they are given choices regarding the books for the required reading and the topics for the required themes.

Use of the Peer Group Norms: Behaviors commonly found in the peer group interactions of black children are allowed in the classroom. For instance, children are permitted to use familiar communication patterns, including the analogies common to traditional black speech, "jive talk," and deliberate use of body motions. The frequent use of poetry is speculated as a factor in the reading program's success because of its similarity to jive in that both involve the rhythmatic use of language.

Use of features of the black church: In addition to communicating her faith in God to the children as a mode of reassurance, Hollins (1982) noted that Collins uses three latent functions of the black church:

- The provision of a place where children can participate, be accepted, and be valued by standards established within their own environment
- The fostering of leadership, encouraging children to speak their convictions, to think for themselves, and to take charge of their own futures
- The encouragement of emotional tension release

In addition, some classroom activities resemble those experienced in church, e.g., choral and responsive reading, audience participation, the use of analogies, and the identification of moral or personal meanings in student readings.

The popular literature gives us a flavor for how small black independent private schools function to educate black children--through an emphasis on traditional curricula, good discipline, character development, a genuine concern for children, and perhaps through a congruence between the instruction and the student's cultural experiences.

## OTHER PRIVATE SCHOOLS

### Overview

Research on the effects of private schools on achievement is sparse and has only recently become a focus of interest. Preliminary studies suggest, however, that private schools, especially Catholic schools, can be successful in teaching low-achieving minority students. The factors hypothesized to explain this success are the same as those which have emerged from the effective schools literature. Whether or not these schools are more successful than public schools in educating minority students remains a question. While some studies claim the private schools are more effective, these studies have received considerable methodological criticism; and their findings must be viewed with caution.

### The Research

Prior to the 1980's, the role of private schools in educating minority students was a topic virtually ignored by researchers. However, in 1981 Coleman, Hoffer and Kilgore released a study for the National Opinion Research Center (NORC) called "Public and Private Schools" comparing public and private secondary schools which suggests that the private sector, particularly Catholic high schools, may be more effective than the public sector in producing academic achievement.

The report was based on cross-sectional data collected in 1979-80 on 58,728 sophomores and seniors attending 1,015 different public, Catholic, and other private schools. The data collected included student academic achievement as well as survey information from parents, students, and school officials on family background, college aspirations, school discipline, and school policies.

Although the study provided a great deal of descriptive information regarding public and private schools, we will focus here on those findings which pertain specifically to minority student performance. These findings are summarized below:

- Students in private high schools, particularly Catholic schools, academically outperformed public school students in basic cognitive skills, most consistently vocabulary and math. This was true even when several family background factors that predict achievement, including race and SES, were controlled. This performance difference was roughly equivalent to one grade level.

- Students in private schools, particularly Catholic schools, had higher postsecondary aspirations than students from comparable backgrounds in public schools, despite the fact that according to the students' retrospective reports, about the same proportion had planned to attend college when they were in the sixth grade.

- Among Catholic schools, the achievement levels and educational aspirations of students from different parental education backgrounds, of black and white students, and of Hispanic and non-Hispanic students were more nearly alike than in public or other private schools. Moreover, in Catholic schools, the racial and

ethnic student gap narrowed between the sophomore and senior years, while in the public schools the gap in both achievement and aspirations widened. This greater homogeneity of achievement in the Catholic sector suggests that the ideal of the "common school," educating children from different backgrounds alike, is more nearly met in the Catholic schools than in the public schools.

They also found that given the same type of student (i.e., with background standardized), private schools create higher rates of engagement in academic activities as reflected by better school attendance, more hours spent on homework, and more rigorous courses taken. In addition, student behavior in school, as measured by such things as the incidence of fights and students threatening teachers, accounted for much of the difference in achievement between public and private schools. The disciplinary climate of the school, such as the effectiveness and fairness of discipline and teacher interest, appeared to affect achievement at least in part through its effect on student behavior variables.

Coleman (1981) interpreted these findings to suggest that achievement increases as the demands, both academic and disciplinary, are greater. He confirmed this suggestion with two comparisons involving students from comparable backgrounds. He found that among the public schools, those that have academic demands and disciplinary standards at the same level as the average private school have achievement at the level of that in the private sector. And among the private schools, those with academic demands and disciplinary standards at the level of the average public school showed achievement levels similar to those of the average public schools.

Greely (1982) analyzed the same database, but focused exclusively on minority students attending Catholic secondary schools in an attempt to determine why black and Hispanic students attending these schools displayed higher levels of academic effort and achievement than similar students in the public high schools. He found that family background factors partially explained the greater academic effort and higher achievement of the minority students in Catholic high schools, as well as the greater disciplinary control and instructional excellence present in these schools. But these student outcome and school factor differences were also partially explained by school effects, most notably by religious order ownership of the school, quality of discipline, and quality of teaching.

Both the Coleman and Greely papers have been extensively criticized. The criticisms generally fall into the four categories summarized below:

1. Inadequacy of the non-Catholic, private school sample. Bryk (1981) has pointed out that the non-Catholic private school sample was too small, particularly when disaggregated by ethnic group, to make national generalizations. Coleman et al. (1981b) have acknowledged this problem and subsequently emphasized only those comparisons between the Catholic and the public schools. Coleman (1981) admits that the non-Catholic private schools constituted a much more heterogeneous array of schools, that the sample in those schools was considerably smaller, and that the sample might have been biased by the fact that a substantial number of these non-Catholic private schools refused to participate.

2. Self-selection among the private school sample. This represents the most common criticism of any study comparing student outcomes in private and public schools. The self-selection bias argument goes as follows:

> Among families with the same income, we would expect that those that make a substantial financial sacrifice to pay for private schools place a high value on education and prepare their children especially well for school. As a result of this at-home motivation and preparation, we would expect these children to have higher achievement test scores on the average than children in the public schools even if the quality of education provided by the two types of schools were the same.

Murnane (1981) noted that the critical question is whether statistical techniques can be used to control for the effects of self-selection.

3. No design control for the public/private school differences in pro-gram. Several reviewers have questioned whether or not it is appropriate to compare the student outcomes from schools with different curriculum emphases (e.g., Braddock, 1981; Bryk, 1981; Willms, 1982). The database reveals that private school students are twice as likely as public school students to be enrolled in an academic or college preparatory curriculum. The National Center for Educational Statistics (Peng and Fetters, 1981) reanalyzed the NORC data and found that when students pursuing an academic curriculum in the public schools were compared to students in private schools, there were no apparent private-public school differences in student achievement. This criticism regarding control for curriculum emphasis has also been used to discount Coleman et al.'s "common school" finding--that performance in Catholic schools is more homogeneous than in public schools.

4. Use of cross-sectional data to measure student achievement. A few critics have noted and Coleman et al. (1982b) have acknowledged the less than ideal method of assessing the academic achievement of students with cross-sectional data. In 1981 the database only included achievement test scores for sophomores and seniors for the 1979-80 school year. In order to infer differences in achievement between private and public school students which were due to other than family background characteristics, Coleman et al. used multiregression statistical techniques to control for these background variables. In addition, they examined inputed growth from the sophomore to senior year and compared it to expected growth. But these student growth estimates were based on different students--those that were sophomores and those that were seniors in 1979-80.

A recent analysis of longitudinal achievement data by Alexander and Pallas (1983) has, in fact, led to different conclusions. They found that minority students and students from low SES backgrounds were not more successful in

private than in public schools.

In addition to the NORC study, two other bodies of research should be considered in discussing the question of the effectiveness of private schools: a report from the National Assessment of Educational Progress (NAEP) and a study by Cibulka. NAEP (1981) reported that when populations are equated for socioeconomic status, there was no statistically significant private school advantage at any age in either reading or mathematics on the tests used in this nationwide testing program. This conclusion was based on 1980 cross-sectional achievement data from a national sample of 104,000 nine-, thirteen-, and seventeen-year-old children from 1,377 schools. However, the NAEP statistical controls for family background did not take into account the "family process" variables that Coleman et al. considered.

Cibulka, O'Brien, and Zewe (1982) have recently conducted a study of inner-city private elementary schools, primarily Catholic schools, which suggests that given a student body similar to that of neighboring public schools, students, parents, and teachers find the instruction in these schools highly satisfactory. Although the focus of the study was on why low-income minority parents choose these schools rather than on student outcomes per se, their results offer some insight into the characteristics of these inner-city private schools which might be effective in educating minority children.

The study, conducted during the 1978-79 school year, centered upon schools that serve predominantly children from low-income families. For inclusion in the study, the schools had to meet two criteria: their population had to be at least 70 percent minority, and they had to be eligible for Title I funding. This resulted in a sample of 56 Catholic schools and seven community-type or Lutheran schools. Information was gathered from the schools through questionnaires administered to all principals and to samples of parents and teachers, through interviews with all principals, and through personal observations in nearly all the schools.

This study's strongest argument for the effectiveness of private inner-city schools is based on parental preference data. That is, the authors argue that private inner-city schools must be effective because poor families make significant financial sacrifices to send their children to these schools. Cibulka et al. found that private inner-city school tuitions average $400 annually per child. More revealing is the fact that 63 percent of the families with an income of less than $5,000 paid $300 or more to send their children to an inner-city private school. These parents apparently make this choice not because of religious training, family tradition, or in antipathy toward public schools, but instead because of the quality of education that these schools are perceived as providing. Based on the responses that parents made to a series of questions, the authors conclude that the principal factor in the decision to choose a private school is the quality of education that school is perceived as providing. They also reported that parents felt that the private schools they selected were more responsive to their own needs and to the educational expectations they had for their children than the local public schools. A major factor contributed to this feeling was the decentralized bureaucratic structure which resulted in greater local decision making.

Finally, the authors employed regression techniques to isolate which

characteristics distinguish inner-city private schools with relatively higher and lower achievement scores. They found that the following pervasive traits of these private inner-city schools seemed to account for their effectiveness:

- o Strong instructional leadership
- o A concept of shared work among staff
- o A safe, orderly school climate
- o A clarity of mission and shared purpose

It should be noted that their findings resemble the themes prevalent in the school effectiveness literature.

Conclusions

The evidence presented in this literature review is at best only suggestive regarding the relative effectiveness of private schools in educating minority youth. The popular literature reviewed in this paper offers only anecdotal student outcome data to support the claim that independent black private schools are more successful than the public schools in educating minority children. In addition, descriptive accounts of how these schools function to serve minority students are not based on careful observation and analysis but again on anecdotal and sometimes speculative information.

The research literature offers more evidence regarding the effectiveness of private schools in educating minority students. However, these data have been strongly attacked, and it is not at present clear whether the early claims of superiority for private schools will hold up.

Despite this caveat regarding any political reasons for interpreting the Coleman data as the researchers did and the limitations of the study designs for examining the effectiveness of private schools in educating minority students, these efforts do suggest the need for educators to explore further the possibility that private schools are more effective than public schools in educating minority students. In addition, the conditions within private schools which contribute to minority students' success should also be examined. Based on the findings of Coleman et al., Greely, and Cibulka et al., as well as the information presented in the nonresearch literature, these conditions appear to echo the themes prevalent in the school effectiveness literature as summarized by Edmonds' (1982) five factors: strong principal leadership and attention to quality of instruction, a pervasive and broadly understood instructional focus, an orderly and safe school environment, teacher expectations of at least minimum mastery by students, and ongoing assessment of student progress as a basis for program evaluation.

## PUBLIC SCHOOL DISTRICT PROGRAMS

In this section, programs to aid low-achieving students, developed by public school districts are examined. Included are efforts developed by (1) the D.C. Public Schools, (2) the New York City Public Schools, (3) the Austin Independent School District, (4) the Mesa Public Schools, and (5) the San Diego City Schools. These programs were selected after a survey of the members of Directors of Research and Evaluation of Large City Schools, based on the availability of documented evaluation results. It should be recognized, therefore, that the programs examined here are not necessarily exemplary nor are they representative. Rather, we have selected them because of the availability of written information regarding their plans, goals, and outcomes. At a minimum, they provide a sampling of the kinds of programs being launched in other school districts.

### D. C. PUBLIC SCHOOLS

#### Overview

The D.C. Public Schools (DCPS) has initiated a program aimed at increasing achievement which includes the Competency-Based Curriculum (CBC), the Student Promotion Plan (SPP), and the Extensive Tutoring Program. Evaluation reports show that in terms of student outcome data, yearly gains in achievement have consistently been found since the program was initiated. In addition, the new promotion/retention plan, based on the CBC criteria and identifying students for participation in Operation Rescue and/or intensive remedial services, was effective in reducing retention rates and increasing student instructional levels. However, it is not possible to pinpoint which of the interrelated program practices are most critical in producing these positive effects.

#### The Research

The D. C. Public Schools has recently been cited in the media and in black affairs publications (see Tony Brown's Journal, 1983) as an example of a black public school system (94% in 1982-83) which has experienced significantly improved student test scores. Over the past five years, DCPS has instituted a program aimed at enhancing student learning and producing increased test scores. This program includes:

- Competency-Based Curriculum (CBC): Newly developed curriculum materials in reading, mathematics, language arts and science were implemented systemwide in 1979 to provide for individual rates of growth and individual differences in learning styles. This high expectation curriculum provides an academic checklist of skills to be taught and mastered in each grade with student competence being measured by standardized achievement tests.

- Student Progress Plan (SPP): This promotion/retention plan was implemented in Grades 1-3 in 1980 and subsequently systemwide. The plan provides for semester promotions based on mastery of skills and acquisition of competencies specified in the CBC.

- Extensive Tutoring Program: Several volunteer tutoring programs were initiated to help students both during the school year and

over the summer. One of these, Operation Rescue, is a cooperative effort between the DCPS and the Urban League to provide volunteer tutorial services to children not meeting the SPP semester promotional criteria in reading and/or math.

Based on his discussions with DCPS officials, Brown has cited a number of characteristics of the DCPS program which have contributed to its success. Several concern the general environment or climate in which learning takes place:

- An emphasis on a "community family," including the use of thousands of volunteers and Town Hall style meetings
- Efforts to build morale and change attitudes among students and staff
- An emphasis on building the self-confidence and self-esteem of students
- Black self-love as the primary source of motivation

Others reflect specific strategies for enhancing achievement:

- All teachers, regardless of their subject area, also teach reading and vocabulary. For example, home economics teachers give vocabulary lessons, gym teachers require compositions, and all teachers give students 20 new words a week taken from their daily instruction.
- Teacher training has been improved in language arts, math, special education, and science instruction.
- Parental involvement has been increased through such strategies as having students keep "skills notebooks" which parents sign periodically to indicate that they had reviewed their child's performance.
- Test-taking skills have been strengthened by circulating books on test taking throughout the schools and by allowing students to practice on other kinds of standardized tests.

Test data reported in the media suggest that these programs may be having a significant impact on student achievement (Brown, 1983). A comparison of Comprehensive Test of Basic Skills (CTBS) test scores reported by DCPS for 1979 through 1983 verifies a progressive improvement in standardized test performance in recent years in both reading and math.

The Competency Based Curriculum (CBC) was evaluated during 1979-80, its first year of systemwide implementation. The evaluation focused primarily on staff development efforts and the implementation of CBC but included some data on student outcomes in the elementary grades.

Student outcomes were assessed in Grades 1-6 on three variables which related to the emphasis of CBC:

- Student achievement in reading and mathematics, as measured by objectives attained on the Prescriptive Reading Test (PRT) and the Prescriptive Math Test (PMT)

- Student absence rate

- Reading interest and amount of self-initiated reading as rated by teachers

To obtain a comparison group of students who had not experienced CBC, the evaluation looked at student outcome data from the 1978-79 school year when CBC was not yet fully implemented. They compared the outcomes of all students who had "CBC teachers" with students in selected schools not actively participating in the developmental stages of CBC. The CBC teachers either had participated in the validation of the CBC curriculum materials or had been involved in implementing the revised curriculum materials and in emphasizing specific noncurriculum activities which support the CBC concept.

The evaluation results suggest that, if anything, the comparison students performed better than the CBC students on these outcome measures. However, district officials questioned the validity of the PRT and the PMT and have since adopted another criterion-referenced test battery.

Evaluation of Student Progress Plan

The Student Progress Plan (SPP) was implemented in the primary grades in September 1980 to eliminate social promotions by requiring mastery of skills specified in the CBC before students are assigned to a higher grade level. The SPP divides each traditional elementary grade level into two grade levels designated A and B to indicate a two-semester organization within the school year.

The effectiveness of the SPP was assessed by comparing the retention rates of primary students after the first and second semesters in 125 schools. In addition, this same comparison was made for 72 Chapter I versus 53 non-Chapter I schools. Finally the reading and mathematics instructional levels of third grade students were compared for October 1980 versus June 1981. These data suggest that SPP has generally been effective in reducing the number of retentions at all primary grades and in increasing the percentage of third grade students placed at or above their instructional level in reading and mathematics. Specifically, the following was found:

- Thirty-two percent (32%) of the students were retained in the same grade at the end of the first semester, compared to 16 percent in June.

- Among Chapter I students, the retention rate decreased from 51 percent for the first semester to 29 percent for the second semester.

- Retentions increased with grade level.

- The percentage of third grade students reading at or above their instructional level increased from 50 percent in October to 65 percent in June.

- In mathematics, the percentage of third grade students performing at or above their instructional level increased from 56 percent in October to 76 percent in June.

Since students who are retained participate in intensive remedial programs or receive Operation Rescue tutorial services, some of the findings from the SPP evaluation bear directly on the effectiveness of these additional services. Unfortunately, the evaluation found it impossible to separate out the individual effects of these services.

Conclusions

The combined Competency-Based Curriculum (CBC), Student Progress Plan (SPP), and Extensive Tutoring Program demonstrate a movement toward a coordinated comprehensive program; and evaluative data suggest that this comprehensive program is promising.

## NEW YORK CITY PUBLIC SCHOOLS: PROMOTIONAL GATES PROGRAM

Overview

The Promotional Gates Program was established by the New York City Public Schools in 1980. This program established performance standards and retention criteria for students and required staff to introduce instructional approaches to help them meet the criteria. The focus of the program is on Grades 4 and 7. Evaluation results suggest that the program appears to have had a positive impact on student achievement in terms of promotion rates. However, the superior promotion rate could not be tied to higher reading achievement, increased attendance, or a particular curriculum.

The Research

In 1980, the New York City Public Schools established performance standards for its students and required staff to introduce instructional approaches to help students meet those standards.

Promotional "gates" were established at Grades 4 and 7 for the 1980-81 school year. The following promotional criteria were enforced: attainment of a reading score on the California Achievement Test (CAT) of not more than one year below grade level in the fourth grade (grade equivalent of 3.7) and not more than one and one-half years below grade level in the seventh grade (grade equivalent of 6.2). Limited English proficient (LEP) students who had been in an English-language school system for less than four years were subject to promotional criteria on the Criterion-Referenced English Syntax Test (CREST). Students who were retained in Grade 4 or Grade 7 in June, 1981, because of failure to meet these required reading achievement levels were placed in special instructional programs offering intensive remediation in reading and mathematics. Approximately 22 percent of all fourth and seventh grade students were identified as being eligible for the program.

Length of time in the Gates Program varied. Students could graduate to the next grade level at three points during the year: after a six-week summer

session in remedial reading or after one or two semesters of participation in the program. Approximately 25 percent of the program-eligible students only attended the summer session, while 9 percent participated one semester and 66 percent participated during the entire school year.

The Gates Program was characterized by the following features:

- Reduced class size (15-20 students)
- Experienced teachers
- Additional staff development
- Increased "time on task" in reading and mathematics
- Additional staff support
- Special instructional strategies

Additional staff support consisted of half to full-time "facilitators" in each of the school districts. A Gates facilitator was the primary resource or contact person in the school district whose assistance included providing materials, improving communication with parents, and working with teachers individually.

Special instructional strategies proven effective in New York City classrooms and as Chapter I remedial programs were chosen for the Gates Program. These instructional strategies included four exemplary reading programs and two exemplary math programs. The four reading programs were: Exemplary Center for Reading Instruction (ECRI) which emphasizes a multi-sensory approach; High Intensity Learning System (HILS-II), a diagnostic-prescriptive approach to reading instruction; Learning to Read Through the Arts (L.R.A.) which uses both a diagnostic-prescriptive and an experiential language arts workshop approach; and Structured Teaching in the Area of Reading (STAR), emphasizing the psycholinguistic approach. The two exemplary math curricula, Diagnostic Prescriptive Arithmetic (D.P.A.) and Real Math (R.M.), teach basic arithmetic skills by stressing the development of mathematical thinking and providing activity-based instruction. In addition, roughly one-fourth of the districts implemented optional, district-developed reading and/or mathematics programs which met this same criteria of proven effectiveness.

Implementation of the program was uneven across the 32 New York City school districts. Two problems were 1) obtaining appropriately trained teaching staff, and 2) eliciting parental involvement. Nevertheless, the program apparently had a positive impact as measured by promotional rates. Data on promotional rates as well as on reading and math achievement are presented below.

Promotion/Retention Rates

The following points summarize the findings regarding promotion/retention rates among Gates students:

- Approximately 70 percent of the students identified in the fourth after participation in either a six-week summer session, one semester, or a full year. The remaining 30 percent were recommended for retention a second year.

- The program was apparently more effective with fourth grade students than with seventh grade students. Seventy-seven percent (77%) of the fourth graders participating in the program were promoted, while this was true for only 63 percent of the seventh grade participants.

- Excluding those students who only participated in the summer session, 59 percent of the students who participated in one or two semesters of the Gates Program met the promotional criteria. This represents the impact of the school-year program.

- Promotion rates among resource room students who participated in the Gates Program were similar to those in the regular school population participating in Gates.

- Although promotion results were not broken down by ethnic group membership, LEP students, who were primarily Hispanic, were less likely than their English-proficient peers to gain promotion. Only 47 percent of the LEP students participating in the program attained the promotion criteria.

Comparisons made to a "control group" of students who had comparable CAT scores the previous year but were not placed in the Gates Program indicated that overall, 57 percent of the Gates students were able to meet promotional criteria by the end of the school year versus 39 percent of students in the comparison group.

Reading and Math Achievement Results

Although the Gates students showed statistically significant progress in reading on the CAT, a comparison of their achievement gains to those of the control group did not indicate any educationally significant differences. After adjusting for the differences in the pretest levels of the two groups, it was found that:

- Grade 4 Gates students scored slightly but significantly higher than the comparison group, but both groups attained the same mean grade equivalent scores of 4.1.

- The Grade 7 comparison group scored slightly but significantly higher than the Gates students with mean grade equivalent scores of 6.5 versus 6.4.

During this first year of Gates Program implementation, fourth and seventh grade students were not held to a mathematics criterion. However, Gates students did receive remediation in mathematics as well as reading during the 1981-82 school year. Students held over for the full year in Grade 4 made significant gains of 19.2 normal curve equivalents (NCEs) in mathematics achievement. Seventh grade students who participated in the Gates Program made gains of 7.4 NCEs. The gains of both fourth and seventh grade Gates students reflect upward movement in relation to other fourth and seventh graders.

Conclusion

The Promotional Gates Program appears to have had a positive impact on student achievement in terms of the number of students who attained promotion after participation compared to the promotional rates for a comparable group of low-achieving students. This was true more so for fourth graders than for seventh graders. However, this superior promotional rate could not be tied to higher reading achievement scores, increased attendance, nor to a particular curriculum. The apparent positive impact of the NYC Promotional Gates Program may have been tied to reduced class size (15-20), increased "time-on-task" in reading and mathematics, experienced teachers, additional staff support and development, and special instructional strategies.

## AUSTIN'S IN-CLASS APPROACH TO CHAPTER I

### Overview

In response to research which suggests that pullout programs are ineffective and that class size reductions might be beneficial, the Austin Independent School District (AISD) established two schoolwide projects where pullout programs were ended and the pupil/teacher ratio was lowered to 15-to-1. The data show that these programs appear to produce significantly greater achievement gains in elementary students, particularly among low achievers. These changes appear to be related more to changes in the quality of instruction than the quantity.

### The Research

A 1978 change in Chapter I regulations allowed school districts to use Chapter I funds to establish schoolwide projects to upgrade the educational program for the entire school, not just for targeted students, when the concentration of low-income students exceeds 75 percent. Normally, teachers funded by Chapter I provide services only to children below the District's Chapter I eligibility criterion. These services must supplement the instruction provided by the classroom teacher. Two elementary schools in the AISD participated in a three-year pilot of schoolwide Chapter I services starting in 1980-81. Chapter I funds and supplemental local funds were used to reduce the pupil/teacher ratio to approximately 15:1 in these schools.

Doss and Holley (1982) examined the achievement gains of about 400 students in schoolwide Chapter I projects (SWP) and compared them to those of some

2500 students in regular Chapter I (TIR) schools.[3] During the first year of the study (1980-81), comparisons were made for both low-achieving (scoring below the 40th percentile) and higher-achieving students (scoring above the 40th percentile). The SWP students consistently outscored low achievers in the TIR comparison group. On the average, they gained about two months more from April, 1980, to April, 1981. More importantly, their gain was equal to one year's growth, 10 grade equivalent months. It is generally believed that low-achieving students from low-income neighborhoods make only about a seven- to nine-month gain from spring to spring (Doss and Ligon, 1981).

The same consistent pattern from grade to grade was not seen for students scoring above the 40th percentile. The SWP students showed meaningfully greater gains only at Grades 3 and 5. At no grade did SWP students score lower than the TIR students. Still, it appears that the schoolwide projects benefited the lower-achieving students more than the higher-achieving ones.

Although the gains of the SWP students from the first year of the pilot schoolwide projects were maintained during the second year (1981-82), the differences between the SWP students and the TIR students were not as consistent across grade levels. The advantage for SWP students was statistically significant for Grades 2 and 3 and close to significant for Grades 5 and 6. Looking at the 1981-82 cohort, it was found that the schoolwide projects were again successful in raising achievement of low-achieving students but only in kindergarten and first grade. At other grade levels, there was a slight trend for SWP students to show greater gains than TIR students at Grades 2, 3, and 6. However, at Grade 4, SWP students gained significantly less than students in TIR schools. Thus, the advantage of schoolwide projects over a successful TIR program are clearly apparent only at the earlier grade levels.

To examine how time was used in SWP schools compared to TIR schools, 352 formal, day-long observations were conducted in AISD schools at Grades 2 and 5 in 1980-81, including 120 in SWP schools.

When the differences between groups were examined in terms of possible educational significance, several findings emerged. It appears that, compared to TIR students, SWP students:

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3. It should be noted, however, that the SWP schools and the TIR schools were somewhat different with regard to ethnicity and income. Over 90 percent of the SWP school students were from low-income families and they were predominantly Hispanic in ethnicity. In addition, all of the SWP students were attending their neighborhood school. TIR schools, on the other hand, ranged from 50 to 75 percent low income. About 40 to 60 percent of the students were of black or Hispanic ethnicity and did not come from the school's immediate neighborhood. To make the backgrounds of the two groups more comparable, higher SES, predominantly Anglo students were removed from the TIR population in the evaluation. The remaining students were then compared at Grades 2-6 using the Iowa Test of Basic Skills (ITBS) Reading Total, Language Total, and Math Total grade equivalent scores.

- Received slightly more instructional time in basic skills
- Tended to be on-task more during basic skills instruction
- Received a little more reading instruction (however, differences ranged from only 5 to 8 minutes)
- Spent more time working on spelling, listening, and perceptual skills
- Had more minutes of contact with their classroom teacher
- Had fewer minutes of contact with other teachers
- Spent more time in their classroom
- Worked in groups of a smaller average size, spending much less time working in groups of 18 or more

In addition, teachers generally saw all aspects of their job as improved. Most SWP improvements, however, seemed to fall into one of three categories:

1. Efficiency
   - Routine tasks such as taking roll and grading papers took less time.
   - The number of discipline problems and the time devoted to handling them were reduced.
   - The teachers believed they had made better use of instructional time by seeing reading groups more than once a day or by having more and smaller reading groups.
   - There were fewer interruptions without a Chapter I pullout program.
2. Quality of Time
   - Teachers were better able to monitor the progress of each student. They believed they could detect problems sooner and provide more and quicker corrective feedback.
   - An increased closeness between the teachers and the students made teachers feel more effective in their teaching.
3. Teacher Morale
   - Teachers felt more in control of what happened to their students, and as a result, they felt more responsible for the success they saw them having.

Recently, cutbacks in resource provision have resulted in changes in the Austin model, with the major result being increases in class size (Ligon, personal communication). Under these conditions, achievement gains have

also dwindled. Unfortunately, this precludes assessing the long-term effects of such a strategy and does not permit us to determine whether the apparently positive effects could be sustained over time.

Conclusions

Austin's in-class, lower pupil/teacher ratio approach to the delivery of Chapter I services appears to produce significantly greater achievement gains in elementary students, particularly among lower-achieving students, than the traditional pullout delivery of Chapter I services. The differences in achievement gains appear to be educationally as well as statistically significant, on the order of roughly two months per school year, and were maintained into the second year of the schoolwide projects. These achievement gains seemed to be related more to changes in the quality of instruction although there were some differences observed in the quantity of instruction as well. Three characteristics reported in the recent Sustaining Effects Study (Anderson, 1981) as related to greater student growth in successful Chapter I programs were also apparent in the schoolwide projects: greater amounts of regular instruction, fewer disruptions, and frequent feedback on student progress.

However, it should be noted that Austin has had to curtail this program because of insufficient resources. Ways of maintaining the reduced class-size ratio without overburdening school budgets need to be sought.

MESA, ARIZONA, PUBLIC SCHOOLS: PROJECT UMBRELLA

Overview

The Mesa Public Schools provides, under the rubric of Project Umbrella, a combination of services directed toward the low-achieving student. Included are an extended day kindergarten, a pullout instructional program in reading, special individualized instructional services for first-graders, an English immersion program for non-English-speaking students, and a variety of services for migrant children. While the data suggest that students are showing progress in their reading skills, it is not possible to tell which services or combination(s) of services are the most beneficial.

The Research

The Mesa Public Schools (MPS) has not conducted studies specifically geared toward programs for minority students. However, they have recently evaluated Project Umbrella, a group of programs directed toward low-performing students which included a high proportion of minority students (Peterson, 1982). Although ethnic breakdowns of the Project Umbrella students or the schools involved in this evaluation were not reported, systemwide data reported elsewhere (Ayabe, 1982) indicate that of the system's roughly 13 percent minority population, about 64 percent are Hispanic, 19 percent American Indian, 11 percent black, and 6 percent Asian.

Project Umbrella, in operation since 1980-81, is a group of specially funded programs at two elementary schools in the MPS District. Although other schools in the district have some of the programs involved in Project Umbrella, these two schools were chosen as target schools for a greater

concentration of funding, due to the larger number of students at these schools who qualify for the programs.

- Chapter I Extended-day Kindergarten. The Extended-day Kindergarten Program provides an additional half-day of kindergarten to students who perform poorly on the Readiness Skills Inventory. The goal of the program is to help children attain skills necessary for entering first grade through emphasis on basic skills.

- Chapter I Pullout Program. The objective of the Pullout Program is to improve students' reading performance through supplementary assistance beyond regular classroom reading instruction. Students receive extra instruction in groups of five or less, either in the classroom or on a pullout basis. The program is aimed mostly at primary students.

- Chapter I First Grade Pilot Program. The pilot program was designed to concentrate individualized instruction in basic skills on first graders in schools with higher proportions of Chapter I eligible students whose Chapter I students have been less successful academically. The program emphasizes smaller groups by using an additional first grade teacher at each targeted school.

- English as a Second Language (ESL). The ESL Program is an English immersion program which provides instruction for non-English-speaking students. Most ESL students in this district are Hispanic. The primary emphasis of the program is development of oral language skills through the use of the Gould XL Language Laboratories and/or the pullout program in which students receive a minimum of two hours weekly tutoring.

- Migrant Education. The Migrant Education Program serves students who come from agricultural families that move around the state or between states for work. The program provides the following services: a basic tutorial program in reading, language, and math (K-12); a home/school language development program for preschool-age children; health care services for Grades Preschool-12; and a summer school program for migrant students who score at least six months below grade level.

The evaluation findings for each of these programs are discussed briefly below.

Chapter I Programs: Extended-day Kindergarten (EDK) students had a mean Normal Curve Equivalent (NCE) score of 48.4 for Total Reading on the CAT. This is slightly below the grade level NCE of 50 but somewhat better than would be expected, considering that EDK serves low-achieving students.

First Grade Pilot Program students showed significant pre-post test gains on the Total Reading subtest of the California Achievement Test (CAT), gaining more than would be expected from normal growth during a school year.

Chapter I Pullout Program students showed significantly greater than expected pre-post test gains on the CAT Total Reading at Grades 1, 2, and 5

at one Project Umbrella school and at Grades 1, 2 and 3 at the other. No grades showed less than expected gains.

Although the overall results of the CAT testing indicated that the Chapter I program had a positive impact on the students it served, there was no evidence that students from the Project Umbrella schools were being impacted more or less than students from other schools.

ESL: Overall, the results of pre- and posttesting on the Woodcock Reading Mastery Test, the Informal Oral Language Test, and the Language Acquisition Scale (LAS) indicated that students from all four schools made gains. In most cases, students from the target schools showed progress similar to students from the comparison schools, even when pretest differences were controlled. It is likely that differences were not found between target and comparison schools since the comparison schools provide similar services. Students were receiving similar types of instruction at all four schools, but students at the target schools received more of the same types of instruction.

Migrant Education: Pre- and posttest scores from the Woodcock, Oral Language and LAS were also available for migrant students. The results for migrant students were similar to those from the ESL programs. Students from all three schools (one comparison school had no migrant students) showed similar gains.

Conclusions

Two general findings can be suggested. First, students in Chapter I, ESL, and migrant programs progressed in their reading skills. Second, students from Project Umbrella schools made about the same amount of progress as comparable students from other schools. The inadequacies of the evaluation design do not permit any conclusions about the relative effectiveness of Project Umbrella compared to less concentrated compensatory services nor about the impact of the individual programs under Project Umbrella.

SAN DIEGO CITY SCHOOLS: ACHIEVEMENT GOALS PROGRAM

Overview

In response to a court order to raise achievement in minority-isolated schools, the San Diego City Schools developed the Achievement Goals Program (AGP). AGP is based on four concepts found to be successful in other programs: mastery learning, direct instruction, time-on-task, and reduced classroom distractions and interruptions. These goals are applied in the context of magnet programs, Chapter I programs, and school improvement efforts. Data show that there has been progress in achievement and that there has been a reduction in the student performance discrepancy between students in minority-isolated and majority schools. However, it is not clear at present which program features are associated most strongly with the progress in achievement.

The Research

In 1980, the San Diego City Schools developed the Achievement Goals Program (AGP). AGP is based on four concepts: mastery learning, direct

instruction, time-on-task, and reduced classroom distractions and interruptions. This program was developed in response to a 1980 court order to raise achievement in 23 minority-isolated schools. Specifically, the court ordered that by the spring of 1984 at least 50 percent of the students attending minority-isolated schools score at or above the national norms on the Comprehensive Test of Basic Skills (CTBS). Districtwide achievement data have been analyzed annually in order to compare the gains of students in these minority-isolated (MI) schools to gains of students in all other district schools, referred to as majority (MA) schools. Spring 1983 results suggest that there has been a reduction in the student performance discrepancy between students in MI and MA schools since 1980.

The test data reflect the accumulated efforts of various instructional programs which include AGP, DISTAR (K-3), and various magnet programs. In addition, ESEA Chapter 1, the School Improvement Program, and other externally funded programs exist in most of the MI schools.

Most of the available analyses of test scores are independent of which curricular programs the students experienced. Additional analyses will occur in subsequent months to determine the impact of many of these program efforts. Only preliminary analyses of test data for participants in the AGP are currently available. Consequently, minority student achievement gains cannot at this time be attributed to AGP. Nevertheless, a description of the student populations of the MI and MA schools, a comparison of their test scores including the preliminary AGP findings, and a description of AGP are presented below.

Test Scores in Minority-isolated vs. Majority Schools: Test data provided for those grade levels tested districtwide indicated that despite the continued higher achievement levels of students in MA schools, the degree of difference between test scores of the MI and MA schools has been reduced substantially across content areas since the 1979-80 school year, especially at the elementary and junior high levels. For example, in Grade 5 reading, the percentage of students in MI schools scoring at or above the national norm rose from 24 percent in the spring of 1980 to 36 percent in the spring of 1983. The corresponding percentages actually declined in MA schools from 69 percent to 65 percent. Note that an increased number of white students attending MI schools has contributed to the reduction in the achievement gap between MI and MA schools but does not totally account for it.

Test results for almost all the ethnic subgroups in the MI schools have improved considerably since 1979-80. With only a few exceptions, the average achievement levels of minority students in MI schools have improved more than their ethnic counterparts in MA schools, especially in math and language. Asian students were the exception; this was attributed to a change in the Asian population in the school district from 1979 to 1983.

The most pronounced gap reduction occurred in Grade 7 math. For instance, 36 percent of the Hispanic students in MI schools had math scores at or above norm in the fall of 1979. In the spring of 1983, 68 percent of Hispanics scored at or above norm. The corresponding values for the Hispanic pupils in the MA schools were 55 percent and 61 percent.

Preliminary Analyses of Test Results for AGP Participants: Three types of analyses involving AGP participants have been at least partially completed.

Firm conclusions regarding the impact of AGP must await complete analyses and tests of statistical significance, but the data thus far reported at least suggest that AGP may be effective in raising minority student achievement, particularly at the primary grades.

The first analysis involved the comparison of the spring 1982 and 1983 CTBS results in reading, language and math for AGP participants in Grades 1 - 5 (i.e., 15 separate comparisons). Although analyses have not been completed for all content areas at every grade level, the mean percentile change shows a gain for seven of the eleven comparisons completed. The average gain across grades and subtests was 7-8 percentile points. For example, in Grade 4 math the mean percentile score of AGP students increased from 45 in 1982 to 52 in 1983.

The second analysis examined the achievement of AGP students based on the number of years they participated in the program. Reading and math test data were available for first through fifth grade students who had participated in AGP one, two, or three years. The percentage of students scoring at or above the norm increased with an additional year or two of AGP in 5 out of the 13 possible comparisons in reading and in 9 out of 13 comparisons in math. For instance, in Grade 4 reading, the percentage of students scoring at or above the norm increased from 29 percent with one year of participation to 31 percent with two years to 46 percent with three years. Thus, out of three possible comparisons regarding years of participation (two years vs. one year, three years vs. two years, and three years vs. one year), there were three increases in Grade 4 reading achievement.

Finally, the percentages of all minority-isolated students scoring at or above the CTBS norm in reading, language, and math in Grades 1 - 5 were compared to the corresponding percentages for students participating in AGP one, two, and three years. As a group, AGP students showed higher achievement in 9 out of 15 one-year comparisons, 6 out of 10 two-year comparisons, and 7 out of 8 three-year comparisons. Generally, a higher percentage of AGP students scored at or above the CTBS norm than all minority-isolated students, particularly in Grades 1 - 3 and when students had been in AGP for three years. For example, in Grade 3 reading, 60 percent of two-year AGP students scored at or above the CTBS norm, while only 53 percent of all students in the minority-isolated schools achieved to this level.

## Conclusions

The test data reflect the accumulated efforts of various instructional programs which include AGP, DISTAR (K-3), and various magnet programs. In addition, ESEA Chapter I, the School Improvement Program, and other externally-funded programs exist in most of the minority-isolated schools. Additional analyses will occur in subsequent months to determine the impact of many of these programs' effect. Only preliminary analyses of test data for participants in the AGP are currently available. Spring 1983 results suggest that there has been a reduction in the student performance discrepancy between students in minority-isolated and majority schools since 1980.

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## Section II

## STRATEGIES FOR ENHANCING ACHIEVEMENT

In the review of intervention programs presented in Section II, a number of strategies were suggested as being potentially useful in enhancing student achievement. For example, reduced class size, mainstream instruction, special curricula, and parent/community involvement strategies were each used by one or more of the programs as tools for improvement. In most cases, however, since programs employed several tools simultaneously, it was not possible to identify their separate contributions.

In this section, we present a more focused look at strategies that have been employed to promote learning in low achievers. Our purpose is to provide a more informative picture of what is known about their individual effectiveness. Included are strategies used in the intervention programs described previously, ones which have been used or proposed for use in MCPS and ones found in the literature to be popular. Our goal in this section is to provide in capsule form a summary of what is currently known about the effectiveness of each of the alternatives examined.

Exhibit 2 presents an overview of the factors reviewed and summary of the findings relevant to each.

This review supports the effectiveness of many practices typically used by teachers to enhance the learning of low achievers and suggests that others, although currently accepted, may, in fact, be detrimental. In addition, some approaches are suggested for examination which appear productive but are as yet unproven or untested.

### SCHOOL LEVEL FACTORS

While instruction takes place at the classroom level, it is clear that factors outside the classroom, such as building level (or even district level) policies, can have an impact on learning and achievement. In this section, we will review some of the studies which have looked at the impact of such building-level variables on achievement. Included are studies of principal leadership, school climate, grade organization, ability grouping, and class size.

#### Principal Leadership

##### Overview

Research on school effectiveness has identified principal leadership as one of the factors associated with successful schools. Leadership has been defined in terms of both managerial and instructional skills, with areas of emphasis varying as a function of the particular study examined. However, despite the wide currency given to this factor in recent discussions of schooling, research which either carefully defines principal leadership or clearly relates aspects of leadership to student outcomes is sparse.

EXHIBIT 2

Summary of Findings Regarding Factors Believed to Promote the Learning of Low-Achieving Students

| Strategy | Hypothesis | Findings |
|---|---|---|
| **Overall School Level Factors** | | |
| Principal Leadership | Instructionally effective schools are characterized by principals who are strong leaders. | Some studies have concluded that effective schools in comparison to ineffective schools have principals who provide strong managerial and/or instructional leadership. However, the research is not clear regarding which leadership behaviors promote achievement or whether leadership from the principal *per se* is essential. |
| School Climate | Effective schools are characterized by a safe and orderly climate in which staff hold high expectations for themselves and their students. | Studies of effective schools show that more effective schools are characterized by a safe and orderly environment, higher expectations for students, and a more positive attitude among staff. The data do not, however, indicate whether the more positive climate is a consequence of higher achievement or a cause. |
| Grade Organization | The particular grades grouped together in a school building have a relationship to student learning. | Studies of middle schools (generally Grades 6-8) have failed to show any consistent relationship between grade organization and achievement. Studies at other grade levels could not be located. |
| Class Size | There is a relationship between class size and achievement with smaller classes being associated with higher levels of achievement. | Studies suggest that only when class size is reduced to less than 15 to 1 is there any real effect on achievement. Within the range of class sizes typically found in public schools, no relationship exists. |

EXHIBIT 2 (continued)

| Strategy | Hypothesis | Findings |
|---|---|---|
| Ability Grouping | Grouping students into groups homogeneous with regard to achievement level has a positive effect on the low-achieving students. | While ability grouping may be of benefit to higher-achieving students, studies suggest that the practice appears to have a negative impact on lower-achieving students. |
| Pullout Instruction | Pullout instruction, instruction in which students are provided special services outside of the regular classroom, is effective in increasing the learning of low-achieving students. | Studies fail to show that pullout instruction enhances learning of low achievers. Further, the pullout approach may actually be detrimental in that students miss important aspects of the regular instructional program. |
| Classroom Level Factors | | |
| Time-on-Task | More time on learning relates to higher performance for low-achieving students. | Time-on-task, defined as "time spent engaged in relevant tasks on which the student is showing a fairly high success rate," has been shown in a number of studies to be positively related to achievement for low achievers. |
| Curricular Variation | There are certain curricula which are more effective than others in enhancing the achievement of low-achieving students. | Studies have failed to support the superiority of any one curriculum over any other in teaching low-achieving students. Generally, however, approaches oriented toward the teaching of specific skills yield higher performance on traditional achievement tests than ones focusing broadly on cognitive or attitudinal variables. |

EXHIBIT 2 (continued)

| Strategy | Hypothesis | Findings |
|---|---|---|
| Direct Instruction | Programs utilizing direct instruction are effective in promoting the learning of low-achieving students. | Studies suggest that instruction in which the teacher plays the role of a decision maker and manager is effective in teaching basic skills in the early grades. |
| Teacher Feedback | Teacher feedback, defined as use of praise and criticism, has an effect on student achievement. | Studies indicate that student achievement can be affected by teachers' use of praise and criticism. However, the effects of praise may differ depending upon the context in which it is delivered. |
| Teacher Expectations/ TESA | Teacher expectations have an important impact on student achievement. Generally, teachers have lower expectations for minority than majority students. Programs which change expectations can lead to improved student achievement. | Studies show that teachers generally have lower expectations for success in the school setting for students from minority than students from majority groups. These expectations have been linked to actual achievement. Programs like TESA, designed to change teacher behavior, appear promising but are, as yet, unproven. |
| Teaching/Instructional Strategies | Minority students have cognitive or learning styles which differ from those of majority students. The mainstream educational environment tends to be more compatible with the style of the majority student and may even stifle the minority child. Programs aimed at creating educational alternatives which better match the style of the minority child will lead to enhanced achievement. | Research suggests that minority and majority students differ in a number of features related to cognitive style, including visual-spatial preferences, categorization and abstraction preferences, and personality style. Little empirical data exist, however, on whether or not changes in the style of the educational environment will provide a learning situation which is more effective for the low-achieving minority student. |

EXHIBIT 2 (continued)

| Strategy | Hypothesis | Findings |
|---|---|---|
| Student Team Learning | Programs using cooperative learning strategies and reward structures will be effective in enhancing the performance of low achievers and strengthen interpersonal relationships. | Studies show that team learning has a positive effect on self-esteem and relationship skills. The data on academic achievement are mixed. |
| Mastery Learning | Mastery learning employs five basic features: very specific educational objectives, well-defined learning units, complete mastery of each unit before proceeding to the next, ungraded diagnostic tests to provide feedback at the completion of every unit, and, as necessary, appropriate additional instruction. | Research shows the strategy to be very effective for low achievers if properly implemented. Several possible drawbacks, however, have been cited concerning the technique, specifically, whether mastery learning is time efficient, suitable for all levels of students, or appropriate for all subject areas. |
| Out-of-School Factors | | |
| Community Involvement | Programs utilizing the support of the overall community in instruction and learning are effective in enhancing the performance of low achievers. | While some programs have included the community support in the form of tutoring or other education-related activity, the separate results of this factor are unknown. |
| Parental Involvement | Programs involving parents in the education of their children are especially successful in enhancing the learning of low-achieving students. | Data regarding programs for school-age children are limited, and it is not possible to draw definite conclusions regarding the efficacy of parental involvement for older children. |

Studies provide little insight into what it is about the leadership role which makes a difference or how one can turn less effective leaders into more effective ones.

The Research

Recently, educators have identified five factors as being characteristic of effective schools (Edmonds, 1979; Cohen,1982). Although definitions of these five factors have varied somewhat from study to study, typically mentioned are:

- Principal leadership
- A school climate conducive to learning
- Direct instruction
- Time on task
- High expectations for achievement

Considered here is the first of these factors, principal leadership. (The other factors will be examined later on in this section). Sweeney (1982) provides a good summary of the leadership behaviors which educators currently associate with well managed, effective schools. He states that effective principals:

- Emphasize achievement
- Set instructional strategies
- Provide an orderly atmosphere
- Frequently evaluate student progress
- Coordinate instructional programs
- Support teachers

An examination of the studies from which these factors were derived indicates, however, that research support for their importance is not as solid as one might like and that their acceptance may be in large part determined by the fact that they make intuitive sense. The work most frequently cited as supportive of principal leadership is highly anecdotal, utilizes questionable methodology, or is based on very small samples of principals or schools. Further, even where associations are found between the characteristics of the principal and the success of the school, it is not all clear that the former causes the latter (see, for example, Brookover et al., 1979; Rutter et al., 1979).

One of the most frequently cited studies is that of Weber (1971). Weber studied four inner-city schools identified as effective for poor students. Identification procedures included nomination by experts and evidence of good test performance. Based on interviews of staff and observations of classes, Weber concluded that the successful schools were characterized by an emphasis on reading, careful and frequent monitoring of pupil progress, and a pleasant, orderly, and quiet atmosphere. He further concluded that administrative leadership was a significant factor in setting the scene for these to take place. While this conclusion may be true, it was not directly supported by the data. Further, the study did not include "ineffective" schools. Thus, there was no way to assess whether or not the identified features really were differentially associated with schools having different performance histories.

Similarly limited in scope is a study by Venezky and Winfield (1979). They examined two high-minority, low-SES elementary schools differing in the achievement level of students. They found that the schools were distinguished by two factors relating to the leadership of the principal:

- The degree to which the principal was a curricular leader
- The extent to which the principal assumed an achievement orientation vs. an interpersonal orientation

Unfortunately, the study provides little additional information on how these factors developed; and fails to provide any evidence that they actually led to the differences in student achievement.

Despite the attention given to principal leadership as a determiner of school effectiveness, it must be pointed out that not all researchers agree that the role of the principal is critical. Gersten, Carnine, and Green (1982) summarize research indicating that it may not always be necessary for administrators to be actively involved in instructional leadership for a program to be effective. Rather, they focus on the importance of critical support functions and suggest that as long as these support functions are being carried out by someone, the behavior of the principal per se may not be critical.

Overall then, the research literature provides only limited information on the contribution of principal leadership to school effectiveness. And, although common sense suggests that a school like any other organization will fare better with a good leader than without one, current studies provide little solid information on either the specific behaviors that make a difference or, more importantly, how such behaviors can be fostered.

## School Climate

### Overview

Studies of school effectiveness have identified school climate as an important correlate of student achievement. Generally, it is believed that more effective schools are ones which can be characterized as orderly and well disciplined, with principals and teachers holding high expectations for their students. Examination of the literature shows that while a positive climate and high achievement do seem to be related, causal relationships are unclear. One cannot say with confidence that a positive climate causes academic success, as opposed to academic success causing a positive climate.

### The Research

A second factor to emerge from the effective schools literature is that of school climate. School climate refers to both the physical and social/psychological environment of the school, with climate being defined in terms of safety, cleanliness, orderliness, extent of vandalism, and staff attitudes toward students and other staff members. Studies of effective schools have been interpreted as showing that schools found to be successful have a more positive school climate compared to those in which students are doing more poorly.

There are two major groups of studies which are typically cited when a

discussion of school climate is undertaken. These are the studies of Brookover et al. (1979) in Michigan and Rutter et al. (1979) in London. Brookover and his colleagues studied schools serving low achieving, primarily urban students. The schools were selected on the basis of performance on the Michigan State Assessment program, criterion-referenced tests designed to assess basic competencies. They examined eight elementary schools in-depth, six of which had shown improving performance and two of which had shown declining performance over time on these measures. Data on activities occurring in the schools were collected through questionnaires and personal interviews. The study found that staff in the schools had pervasive differences in attitudes toward student achievement. The staff in declining schools had low opinions of their students' abilities, while staff in the improving schools had high opinions of their students' abilities.

In the second study, Rutter et al. followed students from 10 years of age through 14 to 16 years of age who were attending 12 secondary schools in London. These schools differed in how their graduates had been performing over the last several years. The study found that students who entered these schools with similar test and behavioral patterns looked quite different at the end of their school experiences. They explained these performance differences by differences in what they call the "ethos" of the schools. Factors affecting ethos include how the school sets its values and establishes its norms for behavior including standards and expectations for performance, the consistency of values throughout the school, pupil investment in and acceptance of school rules, and group management in the classrooms.

More recently, analyses of school climate have focused more on attitudes of staff toward each other and their work than on attitudes toward students. Cohen (1983) interpreted these studies as showing that effective schools have a strong sense of community with commonly shared goals (including high expectations for staff and students). Along this line, Little (1981) identified two norms which characterize successful schools. These are "collegiality" - the notion that the work of teachers is shared work, not work to be done exclusively in the isolation of the classroom and "continuous improvement" - the expectation that improvement in instructional practice on the part of teachers is continuous and never ending regardless of how long one may have been in the classroom. The implication is that when these norms exist among staff, similar attitudes will be displayed toward students.

Taking these studies as a whole, it appears clear that where students are succeeding academically, the climate of the school is a more positive one, expectations are higher, and there is generally more of a "can-do" attitude. However, as with the literature reviewed earlier on teacher expectations, it is very difficult to say what is cause and what is effect. However, common sense suggests that attempting to make the climate of a school as safe, orderly, and positive as possible is a laudable goal in and of itself. One probably need not wait for solid research findings before considering school climate an important factor worthy of attention.

## Grade Organization

### Overview

Despite the fact that schools have utilized a wide variety of grade organizational patterns at both the elementary and secondary levels, there is no evidence that any particular patterns are more or less effective in promoting achievement. However, outside of the middle school level (roughly Grades 5-8, depending on the particular study or district policy), there has been little empirical research to address the question; and most of the literature reflects opinions or attitudes of administrators or other educational personnel.

### The Research

Schools have used a wide variety of grade organizations. There are elementary schools with PreK-6, K-6, K-3, K-4, K-5, and K-8 organizations. There are middle schools with 3-6, 4-6, 5-6, 5-8, 6-8, and 7-8 grade organizations. And, senior highs typically use either 10-12 or 9-12 groupings. In debates over these structures, questions regarding the effects of grade grouping on achievement have been raised; and the possible pros and cons of receiving one's education with a wider or narrower age range of students has been given a good deal of attention.

A review of the literature showed, however, that outside of the middle school level there is a total lack of empirical research on the effects of grade organization on achievement (Hawkins, Chambers, Frechtling, and Frankel, 1983). We do not know whether there is any effect on overall student achievement--or the achievement of particular groups of students--of being in, for example, a K-2 as opposed to a K-6 school.

At the middle school level, the research, while more voluminous, is not a good deal more helpful. The overall conclusions of the research efforts is that the the studies fail to support the superiority of any particular grade organization over any other as far as student achievement is concerned (ERS, 1983). A four-year study of middle schools in Montgomery County reached essentially the same conclusions (Larson, 1982). This study concluded:

> Despite claims to the contrary, the study showed that there was no clear-cut relationship between the type of school structure and either achievement or self-concept. In fact, pupils' attitudes toward themselves and school were influenced more by sex and age than by differences in school programs.

Overall, the studies suggest that there are no solid educational reasons for choosing one form of grade grouping over another. This should not be taken to mean, however, that there are never any instances in which a given grade structure may be preferred. Practical concerns, such as costs and school utilization, have, in a number of places, provided very strong arguments in favor of one or another of the available alternatives.

## Class Size

### Overview

Many people, educators as well as laymen, believe that there is a strong relationship between class size and student achievement; and the issue of class size is frequently raised in discussions of educational quality. The research on class size, while substantial, has until recently been considered equivocal in its implications, with some studies showing no effect of class size and others indicating that smaller is better. At present, analyses appear to support the conclusion that class size does affect achievement, but only when the student-teacher ratio is reduced substantially below what is common in public school classrooms. Specifically, significant gains are realized only when class size drops below 15 to 20 students per class. Above this range, changes in class size fail to produce any educationally meaningful differences in student achievement.

### The Research

Parents, teachers, and other educators have long been concerned about the effect of class size on student achievement. Many a political debate has centered on the issue of class size, and the belief in the importance of small classes has led many parents to abandon the public schools for a private school education (Frechtling and Frankel, 1982; Edwards and Richardson, 1981). Nonetheless, the research literature has failed to support the hypothesis that smaller is better, either in general or for certain groups of students. A comprehensive review of the literature by the Educational Research Service (ERS) in 1978 concluded that the research findings were "contradictory and inconclusive." The authors state:

> Research on class size suggests the importance of an emphasis on the methods and quality of instruction in the classroom rather than on the quantity of pupils in the classroom.

Similar conclusions were reached by the World Bank (1978) in an overview of studies conducted in emerging nations. Quality of instruction rather than the number of pupils per teacher was cited as being critical.

More recently, work done by Glass and Smith (1979) appears to challenge this interpretation, indicating that class size does have an effect on overall student achievement. Glass and Smith, using a statistical technique called "meta-analysis," examined 77 studies of the relationship between class size and achievement. Included were data related to the progress of nearly 900,000 students, spanning 70 years of research in more than a dozen countries. The authors conclude:

> There is a definite relationship between class size and student achievement, but that relationship does not manifest itself until class size drops below 20. Class size has virtually no impact on achievement as it decreases from 40 to 20 students, but it raises achievement by about 10 percentile points in dropping from a class size of 20 to a class size of 10.
>
> Class size has a greater impact upon secondary students'

achievement levels than it does on the achievement levels of elementary students.

The conclusions reported by Glass and Smith, while accepted by some educators and researchers, have been severely critiqued by others. The ERS (1980), for example, has been sharply critical of the meta-analysis charging that Glass and Smith 1) overgeneralized their conclusions, given the actual data; 2) relied on fundamentally fewer studies than they claim to have examined; 3) were not consistent in their use of analytic methods; and 4) offered contradictory interpretations of the same data. The ERS reasserted their confidence in their earlier study, charging that the Glass and Smith work is not totally sound. More recently, Slavin (1983) charged that Glass and Smith's conclusions regarding the effects of very small classes are entirely due to studies of tutoring efforts, not class size as it is usually understood. Slavin argues that without the addition of these studies the meta-analysis would show essentially no relationship between class size and achievement within the range of normal or practicable variation in schools.

Despite these charges, the predominant sentiment among educators is to accept the conclusions of the Glass and Smith paper. Namely, class size is seen as affecting achievement when the student-teacher ratio drops below 25-20 to 1. The focus of the debate has turned to practical ways of achieving such a reduction. One such effort is summarized in Section II of this paper where the Austin, Texas, "In-class" approach to Chapter I instruction is presented.

## Ability Grouping

### Overview

Overall, the research on ability grouping suggests that while instruction in homogeneous ability groups may be of some academic benefit for high achieving students, ability grouping has been found to be detrimental to those who are lower achieving. Further, there is some indication that while ability grouping may be effective for higher-achieving students, lower-achieving students are harmed by this practice.

### The Research

Ability grouping refers to the practice of separating students into instructional groups which are homogeneous with regard to ability or achievement level. At the elementary level, classes of students are typically subdivided into groups for different subject matters. This is especially true in the case of reading, where grouping begins as early as kindergarten or first grade. At the secondary level, whole classes are formed based on achievement in a specific subject matter. Theoretically, these may change depending on students' skills in the particular subject matter being taught.

Proponents of ability grouping suggest it is advantageous for the following reasons (Goldberg, Passow, and Justman, 1966):

- Teachers can more effectively adopt practices and materials and set expectations and standards in homogeneous ability groups.

- o Each pupil will receive more teacher time and attention in the absence of ability extremes.
- o When class ability is narrowed, students compete with peers and are faced with more realistic criteria against which to measure themselves.
- o Class manageability and pupil and teacher comfort are enhanced.

Research by Evertson, Sanford, and Emmer (1981) indicated that the benefits of ability grouping may be greater where classes are taught by relatively poor managers.

However, other studies and syntheses of research which have been conducted over the last fifty years do not provide conclusive support for this practice (Findlay and Bryan, 1970; Froman, 1981). Further, while research suggests that gifted students may profit from ability grouping (Kulik and Kulik, 1982), the majority of studies show that low-ability students do not gain from being placed in low groups (Marascuila and McSweeney, 1972; Kulik and Kulik, 1982). Interestingly, the findings are similar for the elementary and secondary grades and are not limited to our educational system. Yates (1966) reported from an international study that such grouping practices may actually widen the gulf between able and less able children.

Factors frequently suggested to explain these findings regarding low achievers are peer influences, teacher behaviors, and teacher expectations. Good (1982) suggested that a homogeneously low achieving group may provide a social context that is detrimental to learning. Because of the maturity level of students placed in a low group (especially at the early elementary grades), problems related to poor discipline and inattention may serve to hinder rather than support achievement. Teacher behaviors may also be affected with more time devoted in the lower achieving groups to managerial duties than to instruction. Even more serious is the finding that grouping may serve as an anchor to student progress (Shavelson,1982). Rist ( 1970) found that groups formed in kindergarten (groups which Rist felt reflected the social composition of the class, not necessarily the students' skills) persisted into the first- and second-grade years. The low achievers remained the low achievers. And, there was a spill-over effect to other areas of responsibility, leadership, and peer relations.

Overall, the research on higher and lower achievers suggests that ability grouping poses a perplexing problem for educators. While the research clearly suggests that this practice is not a very good one for promoting the achievement of low achievers, studies also show that ability grouping may benefit higher achievers.

## Pullout Instruction

### Overview

In order to target instruction to students with special needs, schools have frequently relied on what has come to be called pullout programs, programs in which a certain group of students is provided instruction in a setting outside of the regular classroom. Evaluations of pullout programs indicate that this practice is generally not beneficial. Studies not only fail to show an advantage for the pullout approach but in fact also suggest that it

may be detrimental.

The Research

Pullout instruction is defined as supplemental instruction that is delivered to students outside the regular classroom. It has primarily been associated with compensatory programs designed to meet the needs of low-achieving students or students with limited English proficiency. More recently, pullout programs have also been adapted to serve high-achieving or gifted students, with activities conducted outside of the regular classroom providing enrichment or acceleration opportunities.

Pullout instruction increased greatly in the late 1960s with the advent of Chapter I. Although this program did not require the use of pullout programs, the regulations appeared to encourage them, as they required Chapter I students to receive "an identifiable program." Little was known about the pros and cons of pullout instruction prior to studies of Chapter I conducted by the National Institute of Education, although considerable debate over the merits of this approach had occurred at the local level (NIE, 1976). Of concern were the possible "labeling effects" of the approach, the disruptive effects of movement in and out of the classroom, and the managerial problems posed by the need to coordinate the services of two teachers (the regular and pullout instructor). The NIE study which looked at a specially selected sample of Chapter I programs (NIE, 1978), suggested that the pullout programs did not provide any educational advantages. Glass and Smith (1977), although somewhat critical of the educational significance of the NIE findings, also reported pullout instruction to be potentially harmful. They conclude that the "pullout" pupil risks being dysfunctionally labeled, missing opportunities for peer tutoring and role modeling, and being segregated from pupils of different ethnic groups. Austin, Texas, has developed a model for Chapter I instruction that explicitly rejects the pullout approach. Preliminary data from this project suggests that it has academic benefits for students and is well liked by teachers.

Recent work by Kimbrough and Hill (1981, 1983) further substantiated the problems associated with pullout instruction, especially when a school is involved in multiple programs for special needs students (e.g., Chapter I, ESOL, special education). They found that pullout programs pose the following problems:

- Children miss core classroom instruction because of pullouts.
- Conflicts between regular and pullout program staff lead to tensions.
- Regular and pullout programs may use materials and teaching styles that are incompatible.
- The pullout programs can lead to minority student segregation.

Good (1983) also concluded that pullout instruction can be dysfunctional with the student missing instructional time because of transitional activities and the general disruption of instruction which all too frequently accompanies movement from one instructional setting to another. Further, he suggested that additional problems, often severe ones, are caused by pullout students' reduced access to the social language and the social identity of his/her classroom group. From both a social and an

educational viewpoint, therefore, the pullout approach can have the effect of delimiting the student's opportunities.

In sum, the recent literature is quite consistent in suggesting that the pullout approach is of questionable instructional value. Like ability grouping, its merits as an instructional approach have not been affirmed for low-achieving students. Further, there appear to be direct and indirect effects of the pullout approach that impede rather than foster the goals of schooling. Loss of instructional time, resegregation, and social isolation are among the outcomes which are believed to result from this form of service delivery.

## CLASSROOM LEVEL FACTORS

Our discussion of factors affecting achievement has heretofore focused on variables which are likely to be consistent across any one school and would be expected to show minimal variation from classroom to classroom. While their effects may be seen at the classroom level, they represent school characteristics or policies that affect the instruction in an entire building. In the pages that follow, we will turn attention to classroom level factors, factors which are more in the control of individual teachers and which might be expected to show more variation from room to room, even in a single school building. These factors are time on task, curricular variations, direct instruction, and teacher feedback.[1]

### Time-on-Task

#### Overview

Time-on-task is the third factor pinpointed by the school effectiveness literature as associated with improved learning for lower achieving students. Time-on-task is defined as "time spent engaged on relevant tasks on which the student is showing a fairly high success rate." The literature suggests that effective classes are ones in which time-on-task is greater and fewer disruptions to the learning process occur.

While this conclusion is generally substantiated for low achieving students, care must be taken not to oversimplify its implications. While it appears true that a classroom free of disruptions with ample time available for instruction is undoubtedly desired, it is not always true that the quantity of time spent on a task is always a good predictor of learning. Studies which have looked at the effects of time-on-task varying grade level, the nature of the task being undertaken, and the achievement level of the students strongly suggest that more is not always better.

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1. Teacher expectations could also be included as a factor affecting achievement which operates at the classroom level in a manner similar to climate at the overall school level. This factor has, however, been covered in Section I of this paper and will not be repeated here.

The Research

The research on time-on-task has been loosely interpreted to show that the more time students spend on learning, the more they learn. However, examination of the research suggests that this conclusion is greatly oversimplified and that variations in both the definition of "time" and the context in which learning takes place do make a difference.

Research studies have defined "time" in a number of different ways, including length of the school year, length of the school day, time allocated to the learning of specific subjects, and time actually spent on a particular task. Depending on the unit of time selected, results have differed. And, despite the fact that recent reports on education have called for a lengthening of the school day or the school year (see, for example, the Report of the Commission on Excellence), most of the studies which have looked at the effects of variation in these relatively gross measures of time have been inconclusive. Perhaps most surprising have been studies such as the one by Husen (1972) which showed little difference in achievement between students in rural Norway who received half-time and full-time instruction.

While analyses of effective compensatory education programs identified time as one of the factors which appeared to make a difference in learning (Rosenshine and Berliner, 1978), the research which is primarily responsible for the current interest in time-on-task emerged from what was called The Beginning Teacher Evaluation Study (Fisher et al., 1978). In this study the teaching behaviors of beginning second and fifth grade teachers were studied and differences linked to performance on reading and mathematics achievement tests. The study considered a wide range of behaviors, including grouping practices, instructional approaches, feedback strategies, and opportunity to learn. After three years of study, the only factor which emerged as being systematically related to learning was time.

Time in this study was very refined in its definition, and three categories of time were examined:

- Allocated time - time set aside for instruction
- Engaged time - time actually used for instruction
- Academic learning time - engaged time spent on relevant tasks on which a student is showing a fairly high success rate

The strongest effect for time was found with regard to this last definition, with weaker relationships emerging for the less restrictive measures. (Fisher et al., 1978). Clearly, this definition is far different from the rather crude ones discussed earlier and obviously has some quite different implications for education.

While the results of this study have had a tremendous impact on educators, making increased time-on-task a major goal of many school improvement efforts, the study and its conclusions have been subject to considerable criticism. Karweit (1983), for example, suggested that the importance of the results from this study have been generalized far beyond appropriate bounds. She suggests that the effects of time which were found in the Beginning Teacher Evaluation Study, while statistically significant, were actually quite modest in absolute terms. In fact she feels that it is

surprising how little effect variation in time actually had. Reporting on her own research (Karweit and Slavin, 1981), she indicated that the effects of time on learning actually can be quite varied. In her studies she found that the relationship between time and learning differed as function of several factors including both the grade level of the child and the achievement level of the individual student. More positive effects of increases in time were found for younger students and students with lower achievement levels.

Quoting Frederick and Walberg, she concluded:

> Time devoted to learning appears to be a modest predictor of achievement. For some types of new material, time may be the predictor... when the material is familiar, time may be weak and insignificant. To the extent that additional time is used to make up for partially ineffective instruction or inability, it may be negatively associated with achievement.

Despite such cautions, many educators have wholeheartedly embraced time-on-task as an inherent good and set increased time-on-task as a stand-alone goal. To the extent that the adoption of such a philosophy leads to a classroom situation where more time is devoted to learning as opposed to managerial tasks and efforts directed at minimizing disruptions are maximized, the results are probably positive. If, however, more time is seen as a broadly applicable solution to complex educational problems and a ready substitute for other practices believed to promote learning, increases in time may well be not only dysfunctional but detrimental to student learning.

## Curricular Variations

### Overview

Early efforts aimed at enhancing achievement were based in large part at identifying which curricular approach was most effective. Evaluations of these programs focused on determining how curricular variations related to variations in program effectiveness. Approaches such as mastery learning, individualized instruction, and competency-based instruction discussed in the previous section are only a few of the curricular approaches proposed at one time or another to provide the key to enhancing the performance of low achievers.

Review of the literature reveals a consistent failure to support the advantage of any one curricular approach over the others. Curriculum *per se* has only rarely been found to distinguish between more or less successful programs, and results from different studies comparing curricula have been contradictory. The only conclusion that can safely be drawn is that approaches which focus on the teaching of specific skills rather than on broader cognitive or attitudinal variables generally yield higher performance on typically used achievement tests. This finding may, however, say more about what is measured on achievement tests than about the relative effectiveness of different curricular approaches.

The Research

Educational researchers have devoted much time and effort to trying to identify which curricular approach "works best," especially for low achieving students. Curriculum in such studies has been defined in various ways, from a particular reading series to a package of instructional strategies, including materials, assessment tools, grouping practices, feedback strategies, and prescriptions for pacing.

Early evaluations of compensatory education programs focused on this issue of curricular variation, attempting to uncover the most useful approach. A central issue in the evaluation of both the early Head Start and Follow Through Models was determining the difference between approaches stressing basic academic skills, broader cognitive skills, and attitudes and self-concept. While the evaluation of these programs generally showed that efforts using highly structured, basic-skills-oriented programs appeared to be more successful than ones which were more broadly focused (Stebbins et al., 1977), the studies also showed that substantial variation in impact existed depending upon factors other than the particular curriculum used.

The Instructional Dimensions Study (IDS), part of the NIE evaluation of Chapter I which was discussed earlier, also attempted to determine the effects of curricular variation. In this study, however, the focus was on individualized instruction and the aim was to see which aspect or aspects of individualization seemed to be most effective. Here individualization was defined in terms of group size for instruction, pacing, feedback, and testing strategies. This study also failed to reveal any "best" approach (NIE, 1977). Despite a very detailed data collection effort which involved both interviews and extensive classroom observations, it was not possible to link differences in any of these aspects of instruction to differences in student outcomes in reading or mathematics.

Interestingly, however, instructional content did emerge from the IDS as being a critical predictor of how well students performed. That is, the study found that the major predictor of performance on the reading and mathematics achievement tests administered was the degree of overlap between what was covered in the curriculum and what was tested on the test. And, considerable variation in overlap was found. While these may seem to be trivial findings, in many ways they are not. First, some of the early intervention efforts, such as those discussed above, were based on the premise that broadly focused instruction would lead to specific gains in skill areas and that these would be reflected in performance gains on typically used measures of achievement. This does not appear to be the case.[2] Second, it was not realized how much difference in skill coverage existed in different text series which on the surface appeared to be covering the same skill areas. This finding has led to both extensive analyses of differences among tests (Freeman et al., 1980; 1983) and in-service efforts aimed at enhancing student achievement through increased

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2. When study outcomes revealed that the basic-skills-structured approach appeared to yield the most positive outcomes, sponsors of the other models suggested that the measurement instruments used did not adequately capture the effects of their programs.

overlap between instruction and testing.

Studies of effective schools have also failed to uncover any curriculum effect. At best, such studies point to the effectiveness of approaches which may be characterized as "direct instruction" (see the next section for a more detailed discussion of direct instruction) rather than ones which employ the open education approach (Rosenshine, 1982). In a recent study by Mann (1983) aimed at developing a consensus regarding what is known about effective schools, curriculum was consistently rejected as an important variable. Mann cautions, however, that such a rejection does not mean that curriculum is irrelevant. Rather, it may mean that at this point in time, the general level of curricula available is sufficiently high so as to render insignificant variations among them.

It is worth adding that this lack of a curriculum effect may also be due to the fact that the definition of a curriculum has varied so much from study to study. And, with some exceptions, curricula bearing different labels may well have as many common features as different ones. Further, despite the fact that program developers have tried (either explicitly or implicitly) to develop approaches that they feel are "teacher proof," the history of curriculum development clearly shows that a curriculum as envisioned by its developer and the curriculum as implemented in the many, many classrooms that are reached are, at best, close cousins.

Overall then, differences in curricula do not relate in any simple or specific way to differences in student performance. While teachers may be more comfortable with certain approaches than others and individual students may respond better with one approach than another, there does not appear to be any single curriculum which can be considered generally advantageous in teaching low achievers.

## Direct Instruction

### Overview

Evaluations of programs for low achievers and the school effectiveness literature have identified direct instruction as an effective tool for enhancing the learning of low achieving students. Direct instructional methods have frequently been found to be successful, at least for teaching basic skills in the early grades.

Review of the literature suggests, however, that while direct instruction is frequently mentioned as a cause of achievement gains, a consistent and precise definition for this term does not exist. In fact, rather than being a specified set of instructional strategies, as the term seems to imply, the many situations to which "direct instruction" has been applied suggests that it is more of a conceptual attitude akin to "active teaching" in its varied forms.

### The Research

Studies of effective schools have identified direct instruction as a critical factor characterizing schools which have been successful in promoting the learning of low achieving students (Edmonds, 1979; Cohen, 1982; Rosenshine, 1979; 1982). Rosenshine defines direct instruction as

being characterized by an academic focus, a teacher-centered focus, little choice of student activity, use of large groups rather than small groups for instruction, and use of factual questions. And, although homework has sometimes been mentioned as a part of the direct instructional package, it has not always been found to be a consistent feature (Peterson, 1979).

The term of direct instruction emerged from the literature on compensatory education discussed earlier. In fact, precisely because no one curriculum emerged from the Head Start and Follow Through studies as particularly effective, educators began to look to instructional principles rather than specifically labeled programs as the key to success in educating low achieving students. Originally, definitions of direct instruction were based on the features found in structured, basic skills models in the early compensatory education programs (see, for example, Becker, 1977). The DISTAR model, a highly prescriptive instruction package, which called for small group face-to-face instruction by the teacher using carefully sequenced daily activities, can probably be considered the original direct instructional model.

Since that time, however, a wider variety of practices has been included under the rubric of direct instruction. And, the role of the teacher has changed considerably. From the DISTAR approach, in which the teacher carried out a set of explicitly defined instructional activities, the approach has developed into one in which the teacher as a decision maker plays a central role. Good (1979) characterized it more as a "conceptual orientation" than a set of teaching strategies, sharing a belief in the importance of the individual teacher and providing a clear focus on achievement. Seen this way, it is closely akin to "active teaching," in which the teacher is seen as a decision maker and a manager with clearcut goals and a variety of tools for achieving them.

Some researchers caution, however, that the value of this approach with low achievers and basic learning tasks does not mean that direct instruction is the best approach for all students and types of learning activities. As with "time-on-task" the principle must be evaluated in the context of who the learner is and what it is that is to be learned. Peterson (1979), for example, found that with direct instruction students did slightly better on achievement tests but slightly worse on tests of abstract thinking, such as creativity or problem solving. It has also been found that its usefulness was related to students' sense of personal control. It was good for externally controlled students, but not for internally controlled students, who fared better under more open instructional conditions (Janicki, 1979).

## Teacher Feedback

### Overview

Teacher feedback, defined as teachers' use of praise and criticism, has received considerable research attention as a variable influencing student achievement. However, research conclusions regarding the relative effectiveness of praise and criticism per se are somewhat mixed, and recent evidence suggests that the context in which such feedback is delivered is important.

Specifically, it appears that while praise can be effective in enhancing

achievement, certain combinations of praise and criticism can have undesirable effects. In addition, when praise is used as a mechanism for behavior management rather than task feedback, the result can be less persistence and thus poorer performance among students who are low achievers.

The Research

Much of the research on teacher feedback has focused on the effects of praise rather than criticism, primarily because of the generally more frequent use of praise in the elementary classroom. In a review of the research on teaching behaviors related to pupil achievement, Rosenshine (1971) found some evidence that high rates of approval were associated with higher pupil achievement, while high rates of disapproval were associated with lower pupil achievement. In a more recent meta-analysis of the instructional effects of positive reinforcement on classroom learning, Lysakowski and Walberg (1981) found strong effects of positive instructional reinforcement which were constant across grades, socioeconomic levels, race, type of school, and community type. Unfortunately, they did not report separate effects for different types of reinforcement but considered the effects of feedback, tokens, toys, and food together.

While these studies seem to suggest that praise is generally beneficial, evidence from laboratory research suggests that praise in the absence of criticism may actually be detrimental to the rate and permanency of student learning. In a review of laboratory research that compared the effects of various combinations of feedback on children's conceptual learning, Barringer and Gholson (1979) found that students perform better when they are given negative feedback following errors than when they are given either positive feedback following correct responses or a combination of the two. Finally, Brophy (1979) summarized what we know about the effects of praise on student learning: "praise correlates sometimes positively, sometimes negatively, but usually not at all with learning." He suggests that the relationship between praise and student learning depends more on context factors such as student ability levels, teacher vs. student initiation, and specification and elaboration of the praise itself. Generally, praise does seem important for low ability/anxious/dependent students, provided that it is genuine and deserved and the praiseworthy aspects of the performance are specified.

Other researchers have examined how praise and criticism interact to affect student behavior under various learning conditions. Dweck, Davidson, Nelson, and Enna (1978), for example, suggested that in certain contexts praise can be detrimental. Specifically, they found that criticism of the intellectual quality of a student's work, coupled with generally positive feedback regarding other aspects of the student's behavior, resulted in decreased student effort. The researchers suggested that the children interpreted negative feedback in this context as indicative of their ability rather than their effort and were more likely to show deficits in persistence and effort following criticism.

Recently, Cooper (1979) has proposed a model which suggests that differential teacher feedback to low- and high-expectation students is the mechanism through which teacher expectations sustain rather than bias student performance (see section on teacher expectations, pp. 75-78). In

brief, his model suggests that teachers more frequently use praise and criticism with low-expectation students as a mechanism for behavioral control, while high-expectation students more frequently receive feedback based on their effort expenditure. These different evaluation contingencies lead low achievers to believe less strongly than high achievers that effort will influence academic outcomes. The result may be less persistence and more failure on the part of the former, thus sustaining poorer performance.

In sum, although the literature is somewhat inconsistent regarding the relative merits of praise and criticism per se, recent studies suggest that the context in which such feedback is delivered and the covariation of feedback type with teacher expectations are important in explaining student achievement.

## Teaching/Learning Styles

### Overview

A number of researchers have suggested that minority students fail to reach their potential in the traditional American school because of limitations in the teaching/learning environment which predominates. Proponents of this view suggest that while students have different cognitive or learning styles, the traditional school environment does not take these differences into account. And, the environment is far better suited to the style of the majority than that of the minority student.

Proponents of this point of view suggest that meeting the needs of minority students who have different cognitive styles requires some serious reshaping of the educational environment teaching strategies employed. However, while the evidence is rather strong that differences in cognitive style do, in fact, exist, and that these differences are related to racial/ethnic group membership, relatively little is known about whether adopting the alternative teaching styles enhances the learning and performance of low achievers. Attempts to accomplish the reshaping of the typical school environment have been limited, and little hard data exist to truly test the validity of this theory or the potential of this approach.

### The Research

Most of the approaches reviewed so far assume that low achievement is caused by some deficit on the part of the student or the student's family. This has been called the "cultural deficit approach." In contrast, some analysts suggest that this interpretation is incorrect and that it is instead the predominance of the monocultural, Anglo-American educational tradition which is at fault (Cheng, 1979). They suggest that the picture of the black child as developmentally deficient is a result of both theoretical misconceptions and schooling practices which stifle the intellectual growth and development of these children (Gordon, 1982).

Proponents of this viewpoint feel the traditional school has an environment which not only is unresponsive to many minority students, but even in opposition to these students' learning and interpersonal styles. They call for a multicultural/multiethnic curriculum (Gay, 1979; Sizemore, 1979) and teaching strategies matched to the different cognitive styles of students (Boykin, 1979). This viewpoint gets some strong support from the

research on cognitive style, and there is considerable evidence that students from different racial/ethnic groups do have different cognitive styles.[3]

Hilliard (1976) found that blacks (1) tend to view things in their entirety rather than in isolated parts, (2) seem to prefer intuitive rather than inductive or deductive reasoning, (3) tend to approximate concepts of space, number, and time rather than aiming for exactness, (4) prefer people stimuli rather than nonsocial or object stimuli, and (5) tend to rely on verbal as well as nonverbal communication. Young (1974) also noted another important information processing difference. Black children apparently are taught to concentrate on many stimuli at one time rather than learning to concentrate on one. Boykin (1979) found that white children seem to have been socialized to tolerate monotony or unvaried presentation of material. Black children, however, require a great deal of stimulus variety.

In her review of the cognitive style literature, Shade (1982) defined cognitive style as composed of three types of factors: visual-spatial preferences, categorization and abstraction preferences, and personality.

Differences found in blacks and whites in these categories are discussed further below:

Visual Spatial Preferences: The area most often studied in the examination of the perceptual aspect of cognitive style is the concept of field dependence/field independence. This concept denotes the ability of an individual to visually structure or select and use relevant information embedded in a larger, interrelated context (Witkin, et al., 1962). In the few studies which have looked at black performance on this dimension and have controlled for differences in SES, black children tend toward the field-dependent end of the continuum (Perney, 1976.

Field dependence/independence has also been studied among Hispanic children. Studies by Ramirez and Williams (1974) and by Kagan and Zahn (1975) found that Mexican-American children tended to be more field dependent in cognitive style than Anglo-American children. On the other hand, Buriel (1978) found no significant cultural differences among white and Hispanic children in field-dependence and related previous differences found to SES.

Racial differences in spatial-perceptual functioning have also been found in several studies of black performance on cognitive tests. These perceptual differences are most evident on the performance subtests of the Wechsler scales and favor white children (Shade, 1982). Blacks also do poorly on the Raven's Progressive Matrices, a visual-perceptual synthesizing test (Goodenough, 1976).

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3. Cognitive style is a complex term used in psychology to account for individual preferences in various cognitive, perceptual, and personality dimensions that influence how one thinks and learns.

Categorization and Abstraction Preferences: The cognitive style preferences placed in this category examine how people attend to and structure a situation. Also examined are the attributes or relationships most often used in classifying objects or concepts. Orasanu and Scribner (1979) examined black and white first and fifth graders and found that while economic status had an effect on categorizing behavior, ethnicity was also responsible for differences. Black children tended to sort lists on a functional basis while white children used the more descriptive, taxonomic approach.

Personality Style: Research generally shows that blacks are more person oriented than thing oriented, are socially interactive, and prefer a cooperative rather than a competitive environment (Boykin, 1979).

Cohen (1969) and others have concluded that the black cognitive strategy differs from the one required in the mainstream educational setting resulting in a conflict between teaching and learning styles. Along this same line, Apple (1979) and Young (1971) observed that schools promote docility and minimal social interaction and expect individualized competitive effort. These demands may clash with the socially interactive black child, accustomed to greater stimulation. The result may be a bored and inattentive child, who sees school as relatively unstimulating, constraining, and monotonous (Boykin, 1979; Morgan, 1980).

These studies, while suggestive, do not, however, provide clear evidence to support the hypothesis that a change in the structure of the classroom and learning environment will provide the answer. And, the effects of a multicultural/multiethnic curriculum have not been adequately explored. The issue of the potential usefulness of developing instructional systems which are more compatible with cognitive/behavioral styles of minority students remains open at this time and cannot be accepted or rejected with any surety.

## Teacher Expectations/TESA

### Overview

There is a large body of research suggesting that preconceptions regarding student skills and performance affect both how teachers interact with students and how students perform in the school setting. In the forefront are studies which appear to show that teachers' expectations regarding how well a student will do are as important a determiner of how well a student does in school as is the student's actual skill level. Further, research tends to show that teachers generally have higher expectations for white students than for black students.

In response to these findings, attempts have been made to make teachers more aware of how expectations can affect their behavior and to provide training designed to promote more effective instruction. One such program, the Teacher Expectations and Student Achievement (TESA), has been tried out in a number of school districts. Evaluation results gathered to date suggest that the program does appear to be effective in changing teacher behaviors and holds promise for increasing student achievement.

The Research

Interest in teacher expectations and their potential impact upon student performance arose with Rosenthal and Jacobson's work (1968), "Pygmalion in the Classroom." Their findings suggested that teachers' expectations for student performance can function as self-fulfilling prophecies. They concluded that teachers' favorable expectations could be responsible for gains in their student's IQs, particularly in the lower grades. Despite some strong criticisms of their methodology and data analysis (Thorndike, 1968; Aiken, 1969; Brophy and Good, 1970; Elashoff and Snow, 1971), subsequent studies have generally supported the existence of expectation effects (Rothbart, 1971; Cornbleth, Davis & Button, 1974; Jeter, 1975; Cooper, 1979; Beady & Hansell, 1981), although findings have been mixed.

The Rosenthal-Jacobson study did not examine how teacher expectancies were communicated to students. Brophy and Good (1970) further explored this issue. Using classroom observations, they examined student-teacher interactions and found that teachers demanded better performance from those children for whom they had higher expectations. Teachers were also more likely to praise performance of these students. Conversely, teachers were more likely to accept poor performance from students for whom they held low expectations and were less likely to praise their good performance when it occurred.

Other studies have found that while the frequency of interactions between teachers and students was the same regardless of the teachers' expectations, differences in the quality of these interactions were found (Brophy & Good, 1969; Good, 1970; Jeter, 1972). Gay (1975) summarized the "higher quality" interactions identified by several studies. They included such behaviors as questioning, providing opportunities for students to participate in substantive interactions, questioning requiring high level cognitive skills, teacher praise and encouragement, teacher acceptance and use of students' ideas, and positive teacher feedback to student responses.

These findings aside, other studies by Brophy and Good (1974) showed that not all teachers behave in these stereotypic ways. Some teachers not only appear to treat students similarly regardless of expectations but also may "bend over backwards" to support learning where past performance indicates the existence of problems.

Several studies have examined whether or not teachers have different expectations for or behave differently toward minority students. Most of the literature available has compared black children to white children. Studies by Washington (1980, 1982) have investigated whether or not teachers have different expectations for black and white students. The study by Washington (1982) revealed that both black and white first and fourth grade teachers ascribed more unfavorable characteristics to black children than to white children. Washington explained the negative perception of black teachers for black students by suggesting that black teachers are "stricter toward black children because they can more readily identify with the realities of growing up as Afro-Americans and, in attempting to help children face those realities, see the need to push them, harshly if necessary, to excel" (p. 70).

An earlier study by Washington (1980) examined the link between behavior and attitudes among second grade teachers in integrated classrooms. She found that black and white teachers ascribed more negative characteristics than positive characteristics to black children. She reported, however, that the hypothesized negative effect of these attitudes and perceptions on academic instruction and discipline techniques was not demonstrated. This study illustrated that it is possible for teachers to have negative perceptions of some children and not act differently toward them.

Another study that examined how teacher expectations are translated into teacher behavior was conducted by Rubovits and Maehr (1973). Their classroom observations revealed that white female undergraduates enrolled in a teacher training course treated seventh and eighth grade black students less positively than their white classmates. For example, fewer answers were requested from blacks than of whites, more comments of blacks than whites were ignored, and black students were praised less and criticized more than white students. This study also involved labeling some students as gifted; an examination of teacher-student interactions with gifted and nongifted students suggested that black students labeled as gifted receive the least attention, are given the least praise, and are the most criticized.

Gay outlined several factors which she felt might "precondition" teacher attitudes and expectations toward minority students. They include (1) minority groups generally belong to the low socioeconomic level; (2) minority students are often labeled as "trouble-makers" and "low achievers"; (3) their performance on standardized achievement tests is below that of the national norm; and (4) the belief that ethnic group children, because of their familial and environmental backgrounds, have difficulty mastering high level cognitive skills.

In interpreting the literature on teacher expectations, however, it is important, to keep two considerations in mind: (1) studies differ in the manner in which teacher expectations are manipulated or formed, i.e., expectations may have been induced or may have developed naturally; and (2) teacher expectations are not formed and acted upon in a vacuum; they can be confounded by student expectations for themselves and for their teachers.

Elashoff and Snow (1971) addressed the issue of student expectations and suggested that the generalizations that one's expectations can affect how one interacts with others applies equally for students as well as for teachers. They point out that students form impressions and expectations regarding teachers at the same time that teachers form their expectations about the students. The authors believe that the teacher may also come to conform to pupil expectations.

Tuckman and Bierman (1971) conducted a study that manipulated both teacher and student expectations. They reasoned that telling students of their academic potential would permit the manipulation of their expectations directly. In this study, black junior high and senior high school students were randomly moved up to the next higher ability group, while a comparable group of students were retained in their assigned groups as controls. Of those moved up, 54 percent were later recommended by their teachers for a high-ability group as compared to 1 percent of the controls. Those moved to the high-ability group also obtained higher scores on standardized achievement tests. The authors concluded that grouping assignment affected

teacher expectations as well as student expectations, resulting in improved student performance.

A study by Haynes and Johnson (1983) supported this effect of self expectation. They found student expectations to have a significant effect on the performance of black college freshmen as measured by overall grade point averages. The students in this study were all enrolled in a compensatory education program for students with academic difficulties. Expectations were manipulated by telling students and/or their teachers that they had been identified as above average by the Office of Research and Evaluation. No such information was provided for a control group. The results showed that self-expectations had a significant effect. In this study, heightening teacher expectations did not have any effect. The authors conclude:

> It therefore seems more practical to motivate students through directly influencing their self-expectations rather than through some less direct method such a teacher expectations. The efficiency and effectiveness of direct self-expectancy inducement demonstrated in this study suggests that teachers, parents, and others who wish to influence students' academic achievement would more likely succeed if they would tell students directly what they can and are expected to achieve while at the same time providing them with the necessary support for achieving what is expected.

This advice not withstanding, educators have taken a careful look at the literature on teacher expectations and have singled out expectations as an important area for teacher training and retraining. One program developed specifically with this purpose in mind is called the Teacher Expectations and Student Achievement Project (TESA). TESA is intended to assist teachers in becoming more aware of the subtle, often unconscious, ways their behaviors toward students serve to convey differing expectations. The program is designed to provide support in modifying those behaviors identified as counterproductive. TESA operates through workshops and teacher-participant observations, stressing peer interaction in the training process.

To date, the program has received a number of endorsements (see, for example, Kerman, 1979), but empirical evaluations are sparse. Meehan (1983) studied the effects of TESA on both teachers and students and concluded that the program was effective, despite what can be classified as mixed results, especially with regard to student achievement and attitudes. At present, the project looks promising, but its actual effectiveness has not been adequately assessed.

Student Team Learning

Overview

Helping students to help each other is the basic theme of Student Team Learning. The program's designers believe that by putting heterogeneous teams of four to five students together to help each other learn specific objectives for quizzes, the students will gain important interpersonal and personal skills and attitudes as well as increasing academic achievement.

The research supports this theory, in part. Studies have shown team learning to have positive effects on self-esteem and relationship skills. The literature on academic achievement, however, is mixed with substantial bodies of writing, saying both that team learning does and does not have an effect on academics.

The Research

Student Team Learning was developed as a teaching technique in an attempt to find an alternative to the competitive reward structure associated with the traditional grading system. Many researchers believed that this system caused loss of self-esteem, disruptions in interpersonal bonds, and decreases in motivation on the part of students. In theory, the "team" concept ameliorates these problems while also raising achievement and desegregating the classroom.

All of the popular Student Team Learning models, such as Teams-Games-Tournament (TGT) and Student Teams-Achievement Divisions (STAD), are based around a similar rubric. The major component of this system is teams of four to five students with an even mix of high, average, and low achievers; blacks, whites, and other ethnic groups; and boys and girls. The function of the team is to prepare its members to take individual quizzes. Team members are encouraged to help one another understand the concepts that they are being quizzed on by the fact that each student's grade is, in some respect, tied to the group's achievement.

To give all students a chance to earn a high score for their groups if they do their best work, achievement divisions are set up (based on past academic performance) so that a student is compared only against those at the same achievement level as him- or herself. Each student's contribution to the team's score is determined by his or her rank among the others in the same division.

Attempting to evaluate literature in this area poses some problems. First, much of what is known about Student Team Learning has come out of Johns Hopkins, which is the place where this particular program was designed. Second, there is seemingly no data which look at this program in action for a period of longer than 24 weeks.

Despite these issues, though, these is a large body of literature discussing the effects of this approach which can be split into two different areas: student attitudes and academic achievement. The findings regarding this first area are much more clearly agreed upon, however, than the second.

Researchers almost uniformly agree that Student Team Learning has positive effects on a young person's social development. In one of his many studies in this area, Slavin (1978) reported that team classes were on task more than nonteam classes and that students in team classes were more motivated, felt more peer support, perceived a greater probability of success, and named more fellow students as friends than those in nonteam classes. Slavin and Karweit (1981) came to similar conclusions.

Research also shows STAD to be an effective tool for integrating the desegregated classroom. Educators realized soon after desegregation began

that although blacks and whites were learning in the same room, they were not interacting with each other. Slavin (1977) studied the effects of team learning on two desegregated Baltimore County classrooms and concluded that this teaching method had a significant effect on the number of cross-race friendship choices and the percentage of cross-race "helping" choices. Again, however, the limited scope and size of the study make the conclusions slightly suspect.

The jury is still out when it comes to the effect that Student Team Learning has on academic achievement. Slavin (1978) stated that the team concept's "effect on academic achievement was not supported." Five years later, however, Slavin, Leavey, and Madden (1983) reported in a study of the effects of team learning on mathematics achievement among a group of third-, fourth-, and fifth-graders that team classes gained more than nonteam classes "on every test at every grade level."

Despite these contradictions, Student Team Learning has shown itself to be an effective tool for socialization of young people and possibly a tool to increase the academic achievement of those students. It has only been tested as a limited tool, however, on the short term (mostly ten weeks or so, with a few exceptions) in particular disciplines, not as a holistic teaching technique; thus, any conclusions which support the team concept as a complete teaching package are unfounded in the literature.

## Mastery Learning

### Overview

"Mastery Learning" in practice is the name for many different kinds of programs, all with similar components but with different emphases. The basic strategy is intensive teaching combined with formative exams to pinpoint exact areas of deficiency. Once known, these problem areas can be retaught until mastered. Since, in theory, every student masters each concept, academic achievement and grades are expected to increase substantially.

Research has shown this technique to be relatively effective at raising academic achievement, and a number of school districts are currently utilizing variants of the Mastery Learning approach. Several possible drawbacks, however, have been raised in the educational literature. Among these is whether mastery is time efficient, suitable for all levels of students, or appropriate for all subject areas.

### The Research

The late 1950s and early 1960s saw a growing concern among educators that, as Block (1971) wrote, "the schools continue to provide successful and rewarding learning experiences for only about one-third of our learners." These people believed that the status quo education system, and the grading system associated with it, was unfairly stacked against a majority of its students by only rewarding top marks only to a select few. This view, combined with the belief that almost all students can master what they are taught, led Carroll (1963), Bloom (1968), and others to propose a system which they called Mastery Learning. This system grew out of a popular educational technique of the mid-1960s called Programmed Instruction. Under

this rubric, a subject area was analyzed into a hierarchy of component behaviors. Each of these components was then taught and tested in succession until the test was passed, with the cycle being repeated for each component.

The mastery strategy employs five basic features: very specific educational objectives, well-defined learning units, complete mastery of each unit before proceeding to the next, ungraded diagnostic (formative) tests to provide feedback at the completion of every unit, and, on the basis of this exam, appropriate additional instruction. "Mastery Learning" is used to describe a program which utilizes various levels of these components to fit the educators' goals. The proponents of this technique argue that Mastery Learning, as Block (1971) wrote, "enables 75 to 90 percent of the students to achieve to the same high level as the top 25 percent learning under typical group-based instructional methods."

While the research does not substantiate these hyperbolic claims, there is evidence of increased academic achievement on the part of "mastery-taught" students, but drawbacks do exist. Chandler (1982) asserted that "of 97 studies that compared achievement scores between mastery and non-mastery groups, 59 favored the mastery-taught students while only 3 comparisons favored the non-mastery-taught students. There were no statistically significant results in favor of either method of instruction for the remaining comparisons."

One such report, written by Dillashaw and Okay (1981) on the effects of Mastery Learning in a high school chemistry class, concluded that Mastery Learning classes made significant achievement gains over nonmastery classes. In doing so, however, the gaps between various aptitude levels remained basically constant; thus, they did not corroborate the pro-mastery learning belief that this strategy can decrease differences in achievement among such levels. Collins (1972) also stated that students in mastery math classes progressed on achievement tests faster than nonmastery ones.

More recently, Bloom (1984) claimed that Mastery Learning, combined with such techniques as the teaching of higher mental processes (HMP teaching) or enhanced cues, participation, and reinforcement (CPR), is as effective a teaching device as one-on-one tutoring. Any of these systems, Bloom contends, will raise academic achievement two standard deviations, or, stated differently, the average student will achieve where currently only the <u>top two percent</u> are doing so.

In related literature on the "two sigma problem," Jones and Spady (1984) identified three instructional conditions that they assert consistently yield this high level of achievement. These are "(1) enhanced <u>initial</u> entry by providing systematic skills and content instruction prior to unit instruction, (2) additional efforts within the instruction to relate the instruction to prior knowledge, and (3) a high quality of instruction which provides instruction with lots of cues, reinforcement, participation, and correction of errors, within the framework of a mastery learning and testing procedure."

Advocates also claim that Mastery Learning is effective at any grade level, and the research bears out this point, in part. There is evidence in the literature of increases in academic achievement for mastery students in

elementary (Trogdon, 1980), intermediate (Collins, 1972), and senior high (Dillashaw and Okey, 1983) schools.

In spite of the aforementioned research, several questions on Mastery Learning still exist. The first problem is whether mastery strategies work equally well for all students. Fiel and Okey (1975) reported that these techniques were effective for remedial education. No empirical data, however, could be found that showed Mastery Learning to be any more effective for high-level students than regular programs. In fact, Arlin and Webster (1983) reported that this technique left faster learners with "wasted time" and that mastery classes were not time efficient. They illustrated this point by showing that in terms of items retained per hours spent, nonmastery students performed at a significantly higher rate than mastery students.

Another problem with mastery techniques is the added amount of a teacher's energy needed to carry out the program. Horton (1979) stated that a 10 to 20 percent extra effort in the classroom plus a large amount of added preparation time is needed to have such a program.

On a more philosophical level, Botel and Botel (1975) had two major criticisms of the mastery program. First, they disagreed with the assumption that all subjects lend themselves equally to being broken down into hierarchical skills which can be mastered. Stated differently, is it as appropriate to break the study of literature down into small component parts as it is to do the same to mathematics? Second, the strong emphasis on testing takes important time away from instruction.

Levine (1984) suggested several other possible pitfalls of Mastery Learning. Among these are the "neglect of higher-order skills, neglect of students' interest and enjoyment in learning, and failure to coordinate mastery learning instruction with other instructional approaches." It should be noted that after raising these issues, Levine goes on to explain how each of the problems can be overcome with proper management, thus implying that none of these shortcomings are fatal to the program.

In sum, Mastery Learning has been widely praised in the literature for helping raise academic achievement, and the technique clearly holds merit for at least some groups of students in some learning situations. These gains, however, are not without such unwanted side effects as possibly slowing down faster learners and creating ineffective time usage.

## OUT-OF-SCHOOL FACTORS

### Community Involvement

#### Overview

Historically schools have considered community involvement to be a useful support to the educational process. Such involvement has taken a wide variety of forms from instructional support to business/school partnerships. Generally, the community role has been rather limited. However, based in part on recent studies of the educational system (and its problems), there has emerged an expanded interest in the potential of community/school

partnerships for improving education. The present wave of partnership activities is, however, only beginning, and the degree to which such efforts will prove effective in promoting student learning cannot at this time be determined.

The Research

In various ways, programs aimed at enhancing the performance of low achiever have utilized community involvement as an added support. And, recent reports on the status of education call for increased interaction between the school and the community, especially the business community (Boyer, 1984). Timpane (1984) stated:

> Nowadays...no convention of education fails to feature speeches and workshops on expanding and strengthening the "partnership" between business and education.

The recent issue of the Kappan (February, 1984) contained several articles on building links between schools and the community.

In programs for low achievers targeted to the elementary school years, community members have been called upon to play roles similar to those assumed by parents such as providing tutorial services (as in the program being implemented in the D.C. Public Schools), providing assistance with homework, or lending general support to the school's mission (as in PUSH-EXCEL). The direct effects of these particular services have not, to our knowledge, been assessed.

In addition, community members and businesses have supported the schools through the adopt-a-school program, through intensive internships, and more focused opportunities to learn about the world of work. An effort in Atlanta called the Atlanta Partnership of Business and Education, Inc., represents one of the most comprehensive programs developed to date. Included are programs for latch-key children, reading and mathematics tutoring programs for students, functional literacy programs for adults, and adopt-a-school programs supported by Atlanta's religious congregations. Although the program seems to be well received by both the schools and the community, formal evaluation results are not available (Danzberger and Usdan, 1984). Other districts which have established some form of school/business partnerships include Houston, Chicago, Springfield, Massachusetts, Pinella County, Florida, and closer to home Fairfax County, the District of Columbia, and MCPS. Of special note is project "High Hopes" currently operating at Blair High School whose purpose is to provide economically disadvantaged students with opportunities to sharpen skills and prepare for careers after high school.

Again few of these programs have been formally evaluated, and it remains to be determined whether or not the popular enthusiasm currently generated by these school/business partnerships will result in concrete gains. And, the extent to which such programs will be found to serve low achieving students remains unknown. At present, all that can be said is that this newly popular approach to improving education is receiving considerable attention and its possible impacts should be carefully watched.

## Parent Involvement

### Overview

Evaluations of parent involvement fail to provide a consistent picture of the effectiveness of this strategy. While there is some tendency for efforts which involve parents as teachers to show more benefits than ones which involve parents in a governance role, the findings are far from convincing. However, the majority of studies are focused on parent involvement which occurs at the preschool level, and evaluations of school level programs are limited.

### The Research

Parent involvement is a term which refers to a broad range of activities. Included are at-home instructional activities intended to support instruction such as tutoring, in-school instructional activities such as volunteer programs, consumer-related interactions such as a homework hot line, parent-teacher conferences or PTA meetings, and advisory/governance activities such as PTA boards, parent advisory councils, and special committees combining parents and school staff.

Although parents have always been more or less considered an important ingredient in the educational process, professional educators have generally been the primary decision makers and service providers where instruction and instructional planning are concerned. Parental involvement was given increased visibility and emphasis in the 1960s as one of the components of the preschool education efforts described earlier. Parent educator models blossomed with parents assuming the roles of instructor, helper, and advisor in the Head Start and Follow Through Programs. Considerable funds were focused on the development of what were called Parent Child Development Centers, special programs aimed at infants and their mothers, whose goals were to provide the mother with the skills to be a better and continuing educator. Debates broke out over the relative merits of models providing service directly to young children and those focused on developing the parent into a more effective teacher of his or her own child.

Despite the fact that some 15 years have passed since these efforts were undertaken, it is not yet clear whether parental involvement really makes a difference to the achievement of the preschool child. Gordon (1979), himself a developer of one of the more successful parent involvement programs for the preschool-age child, concluded that parent involvement in the instructional process does have an impact and that this impact is long lasting. Citing several research studies and reviews of the literature, he concluded that the results are clearly positive. An evaluation of the Parent Child Development Centers also found them to be effective but costly. Andrews et al. (1982) found positive effects both on children's development and on mothers' verbal and behavioral skills. In contrast, White (1984), after examining 64 literature reviews and 630 studies, reached a far more modest conclusion. Generally, he found that while preschool intervention programs have been effective (at least in the short run) in enhancing child development and student achievement the importance of parent involvement remains a question. However, he stated:

> ...the data from these different sources of information suggest that programs which involve parents extensively can be effective, but they are no more effective than programs which do not involve parents. These is no support for the position that involvement of parents leads to more effective intervention programs.

Preschool efforts in which parents take on governance or advisory roles have generally not been found to be particularly effective in promoting student achievement. They do, however, benefit parents by increasing their awareness of school problems and needs, increasing their investment in and satisfaction with the educational services provided, and providing expanded political and career opportunities for parents who participate (Gordon, 1979).

The data on programs for parents of school-age children are far more limited. Gordon (1979) and Fantini (1981) concluded that extant data do not add up to solid evidence one way or another. Literature on programs for school-age children typically is more descriptive than evaluative (see, for example, Collins, Moles, and Cross, 1982), providing useful data on models but little data on outcomes. Stearns and Peterson (1973) also suggested that the literature is limited, but reinforced the notion that it is important to distinguish between types of participation. Again, they suggested that benefits appear stronger where parents have been employed as tutors for their children rather in an advisory or governance capacity.

The intervention programs reviewed earlier do not provide much additional insight into the school-age question. Apparently, equally successful programs differ drastically in the emphasis placed on parent involvement; and where involvement exists, it is not possible to separate out its effects from the effects of other program components.

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## Section III

## SUMMARY AND RECOMMENDATIONS

This overview of the literature indicates that progress is indeed being made in learning how to teach low achievers more effectively and that in many places substantial gains are being reported. This optimistic note must, however, be tempered by the observation that overall gaps continue to exist nationwide in the achievement of minority and majority youngsters and the successes which have been found can best be characterized as being modest in scope.

This overview also shows that the studies do not yield any one formula that can be employed to guarantee the progress of students and that what appears to work differs depending on many contextual factors: the specific needs of the students, the strengths and weaknesses of the extant program, the skills of the teaching staff, and the availability of other supports. Nonetheless, it is possible to derive from these studies strategies that MCPS might wish to explore. Included are recommendations regarding practices whose continuance should be questioned, as well as ones which hold promise and should be more fully explored.

Two practices clearly emerged from the data as ones whose efficacy should be reexamined. These are pullout programs and ability grouping. These practices, although useful in theory, appear in the reality of most school settings to be counterproductive. The hoped for benefits of placing together students with similar skills and needs seem to be generally unrealized or overshadowed by other factors. Most disturbing is the fact that a concomitant of such grouping too frequently is the labeling of students, the stifling of expectations, and the provision of impoverished or poorly coordinated instruction.

This is not to say that pullout programs and ability grouping should summarily be eliminated. For example, it is difficult to see how some sort of grouping by skill level could be avoided at the secondary level where multiple levels of course offerings are frequently found. Indeed, such a suggestion seems directly contradictory to MCPS' current expansion of honors offerings and the nationwide thrust toward providing opportunities for more advanced work at the senior high level. Even at the elementary level, it is not at all clear that the needs of some gifted and talented students could be adequately met without ability grouping of some kind. Nonetheless, given the findings of the literature and the avowed goal of MCPS to enhance the learning of low achievers and increase the performance of minority students, a closer look at these practices is called for. Careful consideration needs to be given to defining those circumstances under which continued utilization is truly justified and those where other alternatives should be explored.

On a more positive note, this overview also suggests that there are at least four practices or strategies which look especially interesting at present and are deserving of a closer look. These are reductions in class size to 15:1 or less, use of student team learning as one approach to teaching, employment of teacher training programs such as TESA to help teachers convey high expectations for all students, and mastery learning programs. In each

of these areas, it is recommended that MCPS explore them more thoroughly in terms of usefulness, benefits, costs, and logistical issues. If possible, such pilots could be incorporated into the minigrant program on a voluntary basis. A few words about each strategy follow:

Reducing class size has been noted as a feature of many of the different programs found to be effective. Where such reductions have appeared beneficial, they have, however, been substantial in size, lowering ratios to 15:1 or less, and accompanied by changes in the approaches employed to teaching. This last factor is critical. Where teachers have continued to teach a class of 15 in the same way as a class of 25, benefits of reduced class size have not been found. To avoid the escalating personnel costs which could result from this practice, schools have in some cases traded off available support and specialist teachers for regular classroom personnel.

Student team learning in which students work together in teams to learn skills is a teaching strategy that has been found to have interpersonal benefits as well as academic benefits, although the data on the latter are somewhat mixed. The strategy provides a viable alternative to the typically competitive environment of the classroom and integrates social interaction with instruction, a combination of features which the literature suggests may be especially well suited to the cognitive style of many minority students. Student team learning as a teaching strategy is not unknown in MCPS. It has been explored by some MCPS teachers served by the Quality Integrated Education Program. A closer look at its usefulness in these schools as well as other MCPS instructional settings would be valuable.

TESA is an in-service program aimed both at increasing teachers' awareness of what their behavior may communicate to students regarding their expectations for learning and changing behavior patterns which have been determined to be counterproductive. It is strongly based in the research regarding the effects of expectations on learning and appears to be extremely useful in assisting teachers to better analyze instructional practices and their sometimes unintended effects. Given the generally positive reception that the program has received where it has been used and its relevance to some critical concerns of MCPS, a closer look at its possible benefits seems appropriate. Some teachers in MCPS have already had experience with the program. MCPS might wish both to afford more teachers the opportunity for this in-service program and to look more systematically at the results of participation.

Mastery learning is a teaching strategy employing five basic features: very specific educational objectives, well-defined learning units, complete mastery of each unit before proceeding to the next, ungraded diagnostic tests to provide feedback at the completion of every unit, and, as necessary, appropriate additional instruction. Research shows this strategy to be very effective for low achievers if properly implemented. Although some important questions have been raised regarding its appropriateness for all curricula and all subject areas, the success enjoyed by this strategy elsewhere suggests that closer scrutiny by MCPS is warranted.

It should be noted that these recommendations are suggestions made based on the findings of the research literature and some admittedly personal judgments regarding how the practices reviewed match MCPS' needs. And, based on their knowledge and background, others who read this overview may well judge different practices to be more promising or more suitable to particular school situations. Readers are encouraged to exercise this right. Again, it must be emphasized that no one practice or combination of practices has been found to provide the answer across all situations. Professional judgment and the careful assessment of the special requirements of each school and its students are the keys.